

THE  
HISTORY  
OF

THE ROYAL NAVAL MEDICAL SERVICE  
FROM 1794 TO 1815







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A view of the crescent from the tower of La Laine's Church, Mexico. The urban development is described in the paper on page 35 of this issue.

## Editorial

The assessment made by the Minister of State (Defence) Supplementing the Royal Naval Hospital Plymouth is to be, retained as one of its purposes, will be welcomed by all who believe that the Royal Navy should have adequate medical support in peace and war. The need for the hospital had been indicated by the Admiralty Board following the H.M. Defence Review but had been ignored until by Sir Henry Tizard, in Part II of his 1964 Report, and it was as a result of this that a further study was undertaken.

No service hospital is cost-effective if viewed solely in terms of its possession, rules of maintenance and housing. In the long years of peace it is easy enough to forget that the primary purpose of the Naval Medical Service is to support the Fleet and the Royal Marines in war. To this end the hospital must have the ability to deploy support for hospital services as well as to handle the hospital ships which do not exist. This need was amply demonstrated in the Falklands campaign of 1982 when 600 medical officers and a considerable number of other medical and nursing personnel, the majority from the hospital, went to the South Atlantic in the Fleet with 1 Commando Brigade in hospital and subsequently deployed in numerous vessels, others up from shore.

These events not only revealed the operational requirements for RN Hospital Plymouth but brought home to all of us in the Royal Naval Medical Service the need to be ready for such a crisis at any time in the future and emphasized that the warning time might well be extremely short.

In making his decision Lord Tordoff recognized the need for the naval hospital to come regularly for their war role. Since Government Commissioned the Hospital Support Unit has regularly supported with 1 Commando Brigade and later reinforced with infantry and heavy armour between 1967 and 1980 and in

land to extend such training to most hospital staff and all will have a clear idea of what their operational role would be. Although from time to time these exercises may have a marginal effect on individual hospital training and care during peace-time hospital requires no one who was in the South Atlantic in 1982 would question their importance postwarwards in real.

There is not to diminish the importance of Naval hospitals in peace. The Navy has sought to support a speedy and efficient service in primary and secondary care and use of hospital beds for able to return men in days, in the shortest possible time. Such patients would not be forthcoming from the National Health Service, which has other priorities. It would be highly desirable for the Naval Hospital Service to extend the secondary care of dependant and seriously injured men for those who wished it. To achieve this however would require a major reorganization of resources from the NHS which would be highly unlikely in the near future.

By extending the commitment which RN Hospital Plymouth makes in the Royal Marines, both service and civilian, should not be undermined. The hospital does a variety of support tasks for the city: provides accident and emergency facilities in the Devonport area and has an important role in the city's disaster plan for which it is very well suited. Further still, the hospital provides through the Plymouth relief ambulance link, emergency medical advice to ships and offshore throughout the world in providing good advice to some 1200 vessels per year.

All these activities demonstrate the importance of this small hospital in the provision of medical support to the Fleet and to the civil community. To achieve these purposes in the current financial climate the hospital has been able to increase its efficiency in a number of important ways which go against traditional practice but are highly effective. Such savings

ments to waste beds and transfer beds are economical of staff and make the best possible use of available beds so that the hospital is able to care for a greater number of patients with a considerably reduced number of beds and lower staff.

This is examination of the role of R/P Hospital Plymouth is doing and how the town is utilizing resources and has constructed the

majority of all those who have been involved. In making the case for the hospital's existence we have had the excellent support of the Surgeon General and the Medical Area Lead. The right decision has been made and we now now look to the future.

GPWC

## Non-ulcer dyspepsia

J. G. Williams

### Summary

Non-ulcer dyspepsia is a common, poorly understood but challenging clinical problem. There are many possible causes and a careful history is essential to doing the patient's symptoms, determine the cause and thus optimal management. Evidence is accumulating that the symptoms reflect

### SYMPTOMS

Non-ulcer dyspepsia has been estimated to affect as many as 50% of adults over a five year period. In spite of this prevalence, which is far greater than that seen with peptic ulcer disease, it remains an obscure condition in the literature—a search over the last five years reveals only 135 papers on non-ulcer dyspepsia as opposed to 4,645 on peptic ulcer disease. Why is it little researched and written about such a common problem? Usually definitions, symptoms, diagnosis and management and symptoms that reflect a whole spectrum of disorders all contribute. Historical descriptions such as functional flatulency, a nervous liver, and colicoid dyspepsia (peptic ulcer and acid reflux) have not helped to define the cause of the phenomenon or explain which condition poorly specified by the generic term "non-ulcer dyspepsia" can be most common. In addition, nausea, bloating, flatulent eructations, dysphagia, and early satiety are symptoms of dyspepsia. On such symptomatic diversity, can ulcer dyspepsia (it has many possible causes) be shown to figure in if dyspepsia is defined as upper abdominal discomfort or pain related to meals and gastrointestinal distress will be controlled by a certain therapy, which will direct specific patients to the diagnosis (peptic ulcer, pain relief, particularly postprandial heartburn, though this may overlap with gastric or esophageal ulcer disease), the gall bladder (the bile reflux syndrome, chronic right upper quadrant pain), colic, altered bowel

habit, mucosa with the onset of systemic disease such as hepatitis or chronic alcoholism, etc. Appropriate diagnosis will usually consist of trial suspensions. Cholinesterase inhibitors (anticholinergics right upper quadrant colic), such as the last paragraph, and there is no relieving evidence to support patients as a specific cause of functional dyspepsia.



Fig. 1. Causes of non-ulcer dyspepsia.

Anticholinergics are unlikely to be found in patients who are polydipsic, or who are suffering from chronic gastritis<sup>1</sup> or stress, and specific therapy relying on cause for stress is more likely to be of benefit than reliance on anticholinergics in these patients. In addition, the point is not that symptom is lower than in normal controls<sup>2</sup>. Though repeatedly demonstrated that patients with a positive result of dyspepsia with or without peptic ulceration.<sup>3</sup>

### INVESTIGATION

For those patients who suffer from dyspepsia on chronic upper gastrointestinal endoscopy (or barium meal depending upon availability), will be required if the symptoms are prolonged or recurrent is increased in the future, and not reliable differentials between non-ulcer and ulcer dyspepsia.<sup>4</sup> Common upper abdominal pain is not ulcer patients, particularly if the history is short and associated with stressors.

and cystitis associated with some 1% symptoms of oligospermia; if such a significant weight loss can occur with benign (usually) dyspepsia.<sup>1</sup> In dyspepsia with trivial ulcer a special cause for the symptoms (such as gastric ulcer disease) or an inflammatory or infectious aetiology of ulcerous significance. In 1861 Horder macroscopic gastric or duodenal (empty from pylorus to caecum) was noted in 14.5% of 309 first-time endoscopies performed between October 1943 and October 1945, with dyspepsia as in the present evaluation (Table 1). No abnormality was found in 13% and no macroscopic gastric or duodenal associated with other dyspepsia. Gastric ulcer was found in only 3.5% usually found in epithelium of the mucosa. Microscopic gastric is known to correlate poorly with histological inflammation and neither appearance is a cause of dyspepsia unless it is fairly severe.<sup>2,3</sup> Chronic gastritis is usually asymptomatic and macroscopically undetectable, whereas acute gastritis (present but no ulcer and vomiting, particularly in the morning

which again correlates poorly with macroscopic appearance). Erythema noted at endoscopy is probably normal as is the finding of small numbers of inflammatory (particularly plasma nuclear cells in the lamina propria of mucosa) with normal with grade 1 duodenitis (Fig. 2).



Fig. 2. Normal duodenum (magnification  $\times 140$  stain H&E).

Table 1 Endoscopic diagnosis made at initial endoscopy for dyspepsia (October 1963 to October 1964)

Total endoscopies	3200	
Total first-time for dyspepsia	508	
Dyspepsia		%
No abnormality	128	25
Duodenitis alone	26	5
Duodenitis + oesophagitis	10	2
Duodenitis + gastritis	30	6
Duodenitis + gastric ulcer	4	1
Duodenitis + duodenal ulcer	31	6
Gastritis alone	16	3.5
Gastritis + oesophagitis	42	8
Gastritis + gastric ulcer	6	1
Gastritis + duodenal ulcer	20	4
Duodenal ulcer alone	16	3
Duodenal ulcer + oesophagitis	7	1.5
Gastric ulcer alone	6	1
Gastric ulcer + oesophagitis	3	0.5
Oesophagitis without duodenitis	140	27
Other	26	5

Duodenitis alone was found in 1% of the Horder cases but this gastritis was consistently associated with other conditions. Much remains very far apart over the present histological definitions and significance of duodenitis.<sup>2,3</sup>



Fig. 3. Normal duodenum (magnification  $\times 140$  stain H&E).

Odynia and erosive oesophagitis and long segment erosion of the epithelium (erosion erythema) of the human process and loss of villous pattern (grades 2-3 duodenitis). For all symptoms first, duodenitis.<sup>2,3</sup> During endoscopy suggest that such appearances imply a phase in the spectrum of duodenal ulcer disease.<sup>2,3,4</sup> has been not necessarily accepted.<sup>2,3</sup>

Hyperplasia, frank duodenitis appears to be a cause of dyspepsia, whether or not an ulcer will develop later. Pyloric (crescent) changes have been noted in a high percentage of a Scandinavian's series of patients with non-ulcer dyspepsia.<sup>5</sup> The recognition of oesophagitis



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## Emergency Surgery for the Complications of Peptic Ulcer in Association with Non-steroidal Anti-inflammatory Drugs: Initial Impressions

E. P. Dwyer and A. J. Walker

### INTRODUCTION

In recent amongst surgeons, one of the patients affected by non-steroidal anti-inflammatory or peptic ulcer disease is higher proportion than ever are taking or have recently completed treatment with non-steroidal anti-inflammatory drugs. These drugs are mainly prescribed to the elderly, and it is this age group who have the most problems as emergency peptic ulcer surgery. It is possible, that such circumstances are altering both the attitude of the surgeon and the content and type of routine tests performed for bleeding and perforated gastric and duodenal ulcers.

The elderly, associated with the complete cure of peptic ulcer disease, particularly haemorrhage, has not decreased over the past 30 years, despite the introduction of some sophisticated investigative techniques.<sup>1</sup> The elderly who account for about 15% of the ulcer population seem to have a disproportionately high mortality. This may be because they have more significant associated diseases, because surgery tends to treat the complications of their ulcer conservatively, or because they are given control most anti-ulcer drugs than other patients. In this study we have investigated the treatment outcomes between non-steroidal anti-inflammatory drugs and bleeding or perforated gastric peptic ulcer. In particular the aim of the surgical part of the study was to review the experience for surgery, the predisposing factors and associated diseases, and also to analyze the type of surgery and the results including mortal-

ity in this specific group of patients who had undergone an emergency operation in order to treat ulcer bleeding or perforation.

### METHOD

The review for emergency operations were one or more of the following features:

**Perforation:** (1) Clinical evidence of diffuse peritonitis. (2) Radiological evidence of free air in the abdomen.  
**Bleeding:** (1) Persistent haemorrhage causing shock or requiring transfusion of greater than four units of blood. (2) A single episode if the patient had stopped bleeding. (3) endoscopic evidence of recent bleeding, on a clot on the ulcer, a protruding vessel or a bleeding vessel. (4) in the over-60s, who make up the at risk age group in terms of surgery, a significant blood clotting a drop in haemoglobin of  $>10\text{g/dl}$ . The maximum guidelines on upper GI polyps, of early surgery and as a result the over 60s form the majority of the surgical group.

The diagnosis of bleeding gastric or duodenal ulcer is made of endoscopy which was always carried out within 12 hours of admission, after the patient had been adequately resuscitated. Patients with perforated or treated had a chest and plain abdominal X-ray, and the diagnosis was confirmed at laparotomy.

### PATIENTS

At the Royal Naval Hospital, Haslemere, a policy exists whereby all patients with an episode of upper GI tract bleeding are referred to the

admission cost less, under the care, jointly, of the physicians and surgeons. In the period between January 1990 and December 1993 all the patients who were admitted to hospital with an episode of suppurative upper GI were bleeding, and all those who were admitted with a perforation were reoperatively treated.

Table 1 Admissions for upper GI tract haemorrhage

Upper GI bleed	113
Perforated ulcer	6
oesophageal perforation	11
Emergency surgery	23
Total	153

## RESULTS

### Haemorrhage

One hundred and fifty-three patients were admitted to the study of whom 53 underwent emergency surgery for bleeding (Table 1). There were six patients in whom an accident diagnosis had been made prior to admission to hospital and in 11 we were unable to find sufficient information for their admission to the study. However we do know that they did not die and therefore did not undergo an operation.

One hundred and thirty-eight patients (11 males 47 females)—mean age 57 years) had an upper GI bleed but did not require an operation by our criteria. The majority of these had duodenal and gastric ulcers and 28 had oesophageal lesions (Table 1). Five patients had combined duodenal and gastric ulcers and in nine patients no source of bleeding was found at endoscopy. Twelve patients had an endoscopic oesophagectomy because they did not have a surgical cap fitted at our initial endoscopy of the upper GI and were quickly moved out of the intensive care ward. However post-operation did have a very significant blood transfusion failed, and they therefore needed surgery not endoscopy. In this group of patients 50% were taking oral inflammatory drugs, 17% NSAIDs aspirin and 23% other NSAIDs. Overall 83% patients were available in the GI bleeding series 23 of whom by our criteria required an emergency operation for bleeding from a gastric or duodenal ulcer.

Table 2 Upper GI Haemorrhage not requiring emergency surgery

Diagnosis	N
Minor Ulcer	60
Varices	4
Oesophagitis	6
Gastric ulcer* (24)	24
Duodenal	18
Duodenal ulcer* (24)	20
Duodenitis	2
No source found	9
No GI	16
Total	113

\* Combined GU and DU 6

### Perforation

A further 28 patients required surgery for perforation, two having suffered both a perforation and a bleed.

### Surgery

In all 48 patients were admitted to the surgical ward, 31 of whom were under the age of 60 (63%). There were 11 males (mean age, 51 years) and 17 females (mean age 71 years) (Fig 1). All the females were over the age of 50 and eight patients were over the age of 60 years. Twenty four (50%) of the 48 patients were taking NSAIDs and were similarly distributed between duodenal and gastric ulcers (Table 2). It is interesting that three of the four patients with peptic ulcer were taking NSAIDs in association required previously. When analysing four of the 48 patients with gastric ulcers had previous ulcers.

Table 3 Site of ulcer and NSAID use (n=48)

Site of ulcer	Total	NSAID	No NSAID
GU	33	17	16
DU	15	4	6
Peptic ulcer	4	3	1
Combined	2	0	2

### Complications

Twenty three of the patients died: 15 from a duodenal ulcer and 28 patients performed 23

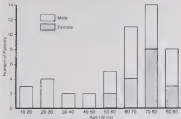


Fig. 1. Age and sex of 47 patients referred to hospital study.

Table IV. Ulcer complications and NSAID ( $n=48$ )

Site of ulcer	Total	Healing		Perforation	
		NSAID	No NSAID	NSAID	No NSAID
DU*	26	6	6	9	13
GU*	18	4	4	6	4
Post pyloric	4	1	1	2	1

\*Combined DU and GU = 2.

from a decisional step. Of the 23 patients who had 15 years' history NSAIDs and among the 26 patients who performed 11 were taking NSAIDs (Table IV). It would appear that there was a stronger association between the ingestion of NSAIDs and bleeding than there was with perforation in this group as a whole.

However, as 40% of the patients were over the age of 50 this age group was analysed separately (Table V). Only six out of the total of the group who performed were taking NSAIDs compared with only 20% of the number of age group. The older patients being more prone to perforation in association with

NSAIDs than the younger in contrast appear to bleeding where 60% of the older age group were taking NSAIDs against only 37% in the overall data.

#### Length of Symptoms

At the time of surgery, 23 patients had symptoms of peptic ulcer of less than 5 months duration. 15 of these having a history of less than one week (35%). One third of the patients had a history of longer than 5 years, of whom 6 had been put on NSAIDs against only 40% were required to have past history.

Table 1: Ulcer complications and NSAID in patients over 65 years of age

Site of ulcer	Toxin	Bleeding		Perforation	
		NSAID	No NSAID	NSAID	No NSAID
DU	24	5	4	3	8
GU	11	4	4	2	1

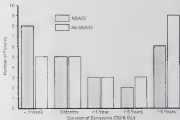


Fig. 1: Duration of symptoms of duodenal (DU) and gastric (GU) ulcers

#### Preoperating features and associated diseases

Two patients had had a previous complication of a peptic ulcer: 3 had bleed and 2 perforated GU ulcers who had 2 more subsequently got on an NSAID. One had a gastric ulcer re bleed and the other a fatal duodenal perforation.

There were 26 patients with significant comorbid diseases—18 cardiac, 3 chronic obstructive pulmonary disease, one malignancy, one cerebral, 2 congested cardiovascular and metabolic, and one congested cardiovascular and respiratory.

Twelve, four patients with a variety of renal and major musculo skeletal problems, were tak-

ing NSAIDs, of whom 4 were taking 2 weak drugs. (Table 1). Two of the seven patients are taking both ulcer and a major haemorrhage and 4 of the 6 patients on continuous therapy suffered a perforation.

#### Operative procedures

The operations were performed by surgical specialists, senior registrars or registrars under supervision. The request decided which procedure to carry out at the time of operation. Various factors were taken into consideration including the length of ulcer history, the length of time since perforation and the degree of perforated contamination. The general results

Table 1. Side-effects presented in complication group and/or requiring emergency surgery

Drug	N	Concomitant * Parent drug + (N)	Complications	
			Bleeding	Perforation
Cefepime	9	10 (2)	5	4
Indinavir 800	6	7 (2, 2)	3	3
Flucanazole (F)	3		3	0
Cefuroxime (C)	4		3	1
Acyclovir (A)	2		1	1
Indinavir (I)	1		0	1
Acyclovir	1		1	0
Phenylbutazone	1	2 (1)	0	1
Zomepirate (Z)				1
Salicylic acid				1
Hydrocortisone	1			1

\* Six patients taking two drugs

ness of the patient at the time of surgery was obviously very important, as was the reputation of the surgeon in terms of any particular type of operation. The aim was to effect the safest possible treatment for a particular patient at their own set of circumstances.

In general those patients who had performed well and also had no ulcer history of less than 1 month did not undergo a definitive operation at the time of emergency surgery. All but 2 patients who died had a vigorous technique of the use of endobagging (Table 1 A). In the C/U bleeding group, 11 patients had a small resection and polylopping off a small portion of the bleeding ulcer. Two patients underwent highly selective vagotomy after duodenotomy and under intubation. In the D/U perforation group the emergency operation was a simple closure with omental patch, but 3 had truncal vagotomy, and polylopping through the perforation and 2 highly selective vagotomy after closure of the perforation.

In the C/U bleeding group various operations were performed. However, only one patient underwent a partial gastrectomy. Three patients had a highly selective vagotomy and closure of the ulcer, but several vagotomy and polylopping. There was removal of the ulcer and one under intubation and 2 had a high endobagging of the bleeding area. Because they were relatively fit at the time of operation, in the C/U perforation group there were again no gastric resections. Three patients were treated by simple closure of the perforation and 1 by removal of the perforated ulcer and closure of the stomach.

Four of these patients had very short ulcer histories.

The mortality rate following surgery was 8.7% overall and all 4 fatalities were over the age of 60, three being female. Three of the five patients had significant associated diseases and two had had a previous complication of peptic ulceration (Table 1 A). Three of the four who died did so following a perforation (3 A) and all three were taking NSAIDs.

The mortality at time of hospital stay was only 4.7%. The mortality from perforation however was 10.7% and one died in a most unusual manner just 48 hours after the ulcer was closed. This patient had no history of a peptic ulcer complication.

## DISCUSSION

The reputation of NSAIDs was measured with 30% of the patients who regarded as completely symptom free in terms of the peptic symptoms, 10% of their peptic ulcer. The evidence of regression in females was double that of males and the females went significantly older than the males. Overall the symptoms appeared to be greater with bleeding than perforation, but in the elderly, the association with perforation was greater than in the younger age group.

General practitioners, rheumatologists and endoscopists therefore provide the main NSAID. General symptoms as a rule are ruled upon to test the complications. However, the former groups must be made aware that there is a gastrointestinal ulcer-related and inflammatory

Table VII Operations performed

Uterine manipulation	TV and P	Open laparoscopy	PCS*	TV and Lap*	SL*
DL blood	11		3		
DL perforation	3	19	3	1	
DL blood	4	2	3		1
DL perforation		9			

\*Torsion, Rega forty and Pyroclastic

\*Highly Selective Rega forty

\*Torsion, Rega forty and Adhesiolysis

\*Salvage I

Table VIII Clinical details of four patients who died

No	Age	Sex	Type of case	Past history	PCAD	Complication
1	58	F	DL	8 years prior blood	No	Blood
2	61	M	DL	3 years	Myocardial infarction	Perforation
3	74	F	DL	24 hours	Myocardial infarction and Stroke	Perforation
4	52	F	DL	10 years prior blood	Anticoagulation	Perforation

drugs should not be prescribed unless specifically indicated and only after careful history taking.

It is not important to us that these drugs which are prescribed more often are associated with a greater number of operations, and we could not possibly extrapolate from our data to advise that any particular PCSAAS is "better" than any other. However, some do seem less prone to be associated with such postmenstrual problems than others. Attention of prescribing bodies in terms of the use of oral contraceptives, drugs used and the patients for whom they are prescribed and the indications for prosthesis may result in an alteration in outcomes of these complications.

In contrast with other reported correspondence this study has confirmed that it is old ladies over the age of 60 who are at greatest risk in terms of requiring life saving surgery for pelvic floor bleeding at perforation.

Finally with regard to the surgical approach to these patients the mortality rate in the U.K. is 10% for perforation and 10% for bleeding. Our mortality rate of 4.1% for bleeding was achieved with only one partial hysterectomy being performed which goes against surgical tradition and standard teaching. It is gratifying

that patients did so well with what might be described as less major surgical procedures than we believe that is the policy of "conservative" but early emergency surgery—following our concept here—which has contributed to the lowering of the mortality. Our policy continues in a prospective study of the problem.

#### ACKNOWLEDGMENT

We are grateful to our surgical colleagues for allowing us to report these patients.

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## Blood Pressure and Diving

R. D. Green and D. R. Letch

### Summary

It is generally recommended that individuals should not undertake diving training or recreation until diving at their normal blood pressure exceeds 140/90 mmHg. This review discusses in concept with particular reference to factors at diving which might influence blood pressure. Longitudinal research indicates that individuals with elevated pressures above 140/90 mmHg have an increased morbidity and mortality, and problems in diving training for entry or diving. Diving does not appear to further drive individuals who have borderline hypertension as defined as an elevated blood pressure between 130/90 mmHg and 139/89 mmHg and there is an indication that those individuals experience an increase not in blood pressure when exposed to the diving environment as compared with those individuals with a blood pressure between 140/90 mmHg and 139/89 mmHg but a slightly increased risk of experiencing cardiovascular disease but this risk is considered negligible when considering the diving, being of an experienced diver. It is important to collect more and consistent data and these indications should not be used, otherwise which will not protect those who still undertake diving.

### INTRODUCTION

The current standard of arterial blood pressure for entry to diving is considered by both the Royal Navy and the Health and Safety Commission as a strong upper limit of 140/90 mmHg. The aim of this paper is to review the rationale for this standard and to consider possible variations from this standard for experienced divers.

### EPIDEMIOLOGY

The use of the 140/90 mmHg level as a diving hypertension standard from long term epidemiological studies that related raised BP levels to subsequent morbidity and mortality levels. A recent data from the Veterans Cooperative demonstrated that the risk of dying from stroke from largely intermediate risk patients was increased even for patients with only slight elevation of their blood pressure. The Society of Actuaries (1984) in their research 'Build and Blood Pressure' made in 1958 demonstrated the increased risks associated with work involving hypertension. This study largely represented manual hypertension as patients who experienced a 140% The risks evaluated clearly both with increasing levels of BP and over the longer time periods of 10 and 20 years as the subject from the Society of Actuaries study (1984) illustrates (Table 1).

After an examination of both national mortality and morbidity figures, the World Health Organization defined levels of blood pressure. A systolic arterial blood pressure below 160 mmHg with a diastolic below 95 mmHg was defined as the normal range and above 160 mmHg 95 mmHg denotes border hypertension range. The intermediate group 140/90 mmHg to 159/94 mmHg was referred to as borderline or possibly hypotensive.

More recent recommendations have raised the above slightly with the 1984 National Institute of Health suggesting an normal a

Table 1

	Age 35			Age 65		
	% surviving 5 yr	and at 60 yr	60 yr	% surviving 5 yr	and at 60 yr	60 yr
Standard risks	92.5	95.5	98.0	84.5	92.1	97.5
Risks with blood pressure reading of						
140/90	87.5	90.4	95.4	84.7	91.5	95.6
140/95	87.5	90.5	95.4	84.9	91.6	95.6
150/90	87.0	90.5	95.4	84.8	91.5	95.6
150/95	86.5	90.0	95.4	84.8	91.1	95.1

labial pressure less than 120/85 mmHg. A diastolic BP between 85 and 95 mmHg is defined as high normal and between 95-104 mmHg as mild hypertension. An elevated systolic BP only of 160-179 mmHg is defined as isolated systolic hypertension.

Prospective epidemiological studies also come from the screened male who are correct with borderline (mild) hypertension.<sup>1</sup> However, the development of this is not uniform. Data from the Framingham study suggests that the risk of a major cardiovascular event is inversely due, based and is linked to concomitant risk factors such as a high serum cholesterol, cigarette smoking, elevated glucose tolerance test and left ventricular hypertrophy.<sup>1</sup>

There have been three major studies into the effects on morbidity and mortality of actively treating hypertension. The Veterans Administration Cooperative Study of a group of men with diastolic pressures above 104 mmHg showed a reduction from 33% to 18% in the risk of developing myocardial infarctus, heart and renal failure and accelerated arteriosclerosis.<sup>2</sup> More importantly the two other studies in closed border-line hypertensives and designed to detect the benefits of treating mild hypertension. The LJS trial has been criticised as perhaps providing little evidence due to the control group that would occur in the community but that these results, which show decreases in mortality may not be representative of what would occur in the community setting.

The Agerholm trial is considered more representative. This was a controlled therapeutic trial involving 1077 subjects. Although a decrease was seen in cardiovascular morbidity, generally there was little persistence given against the development of subsequent heart disease. There was also no clear protection for younger patients and protection was shown only for those patients whose diastolic pressures ranged 95 mmHg or higher during the first year of study.

#### EFFECTS OF DIVING ON CARDIOVASCULAR SYSTEM

A number of studies have investigated the effects of immersion and increased pressure on the cardiovascular system. Blood and Murray measured the effects of shallow water immersion on man.<sup>3</sup> Five subjects were in water during night hours periods of bed rest, compared to immersion in a large water tank in a temperature position such that the level of the right

atrium was approximately 50 cm below the surface of the water. During immersion the heart rate showed a gradual decline from a mean rate of 72 beats/min to 45 beats/min. Actual mean blood pressure declined gradually over the first five hours of the test. This fall was more truly significant during the first hour (decreased to a mean BP with a decline from a mean of 90 mmHg to a mean of 47 mmHg). Serial values declined from a level of 48-53 ml/min to a level of 15-21 ml/min. Cardiac output remained within normal limits.

Shilling, Harrison and Morris examined the effects of pressure on blood pressure in a depth of 18 m.<sup>4</sup> They studied subjects, immersed in water at atmospheric pressure, and this is a pressurised situation. They observed a drop in systolic pressure from an average of 112 mmHg to 107 mmHg while patients were relaxing and a drop from 120 mmHg to 116 mmHg while subjects were working. Diastolic pressures were not recorded. A combination of increased position, higher initial pressures of 170 mmHg and hypoxia are postulated as the factors causing these effects.<sup>4</sup>

Further studies have involved examination of atrial pressures in various postures where exposed the pressure. Microcatheter studies were undertaken to determine the cellular basis for hydrostatic pressure effects on impulse propagation and refraction in canine myocardium. In 130 bar myocardial excitability was depressed and the maximum upstroke velocity of the action potential was reduced by 10%. There was also prolongation of the duration of the cardiac action potential. The pressure is thought greater than that in which humans are exposed while diving.

However, human studies have also shown a small possible myocardial change in pressure. Ten divers were studied during three night immersion dives to a maximum depth of 60 metres for 112 bar (11.2 head). All divers demonstrated a decline in heart rate of 18-30% with a slow adaptation and return of the heart rate to normal observed when the divers and environmental pressures were held constant. In the divers diving to 60 metres up to 17 beats the diving breathing 97.8% nitrogen and 1.97% O<sub>2</sub> heart rates decreased in uncontrolled experiments were said to be consistent with electrocardiographic changes involving high rates of the QT interval. The mean of the T waves and ST elevations although a must be emphasized that these changes were still within the limits of physiological normal. These



Changes are suggestive of adverse effects on the cardiovascular endothelium during diving.

Immersion can also produce a decrease and increase in total peripheral resistance as postulated to cause a hypotensive pressure gradient with redistribution of circulating blood volume and compensatory engagement of the cardiovascular circulation. Response pressure homeostatic effects also contribute to an increase in central blood volume.<sup>14</sup> The increase in central blood volume is apparently mediated by cardiopulmonary stretch receptors. Changes in fluid and electrolyte homeostasis must also play a modified diuretic balance and therefore.<sup>15</sup>

Full immersion in a water pressure appears to have no major diuretic effect than being exposed to land.<sup>16</sup> However, while diving the diuretic is fairly fully exposed for a length of time and consequently a diuresis will occur during all dives.

Another aspect of the diving environment which will affect the cardiovascular system is exposure to cold. This may involve either gradual cooling or more severe water exposure. The effects of cold are primarily a result of constriction of the sympathetic vasoconstrictor system. There is a reflex tachycardia increased blood flow to skeletal muscle, skin vasoconstriction and an elevation of blood pressure which is usually an increase in systolic pressure with some decrease in diastolic pressure.<sup>17</sup>

Randall and McCune measured five subjects in cold water tanks at 3-4.2°C.<sup>18</sup> Blood pressure rose from a mean of 110 mmHg to a mean of 140 mmHg. A further experiment revealed the exposure of 72 male volunteers aged 20 to 40 years to air and cold showers. Arterial pressure was directly measured. The blood pressure rose from a mean of 110/75 mmHg to 171/111 mmHg. Cardiac output was measured in two subjects with an increase in output from 1.9 to 12.5 l/min/min being recorded on one subject and an increase in output from 4.2 to 11.2 l/min/min in the other.

Adult exposure to cold in however uncommon in divers who wear thermal protection in the form of wet suits, dry suits or heated suits when operating in cold water. Sudden cold stimulation of skin is helped with fluids of 3 to hot water supply to a large extent. This is an uncommon occurrence. Constant cold exposure requires much less time on the cardiovascular system and the marked rise in blood pressure

which occurs with sudden immersion air not observed.

Blairidge in an analysis of sudden death occurring in cold water in middle aged males suggested that the behavior of the victims reflected a loss of consciousness and the taking of heavy damage and death indicated cardiac arrhythmias and arrest as the underlying cause. Most of the victims had previous cardiovascular risk symptoms such as hypertension, coronary artery disease or cardiac arrhythmias.<sup>19</sup> Although a history of hypertension was suggested as a possible contributing factor, the severity of hypertension in the victims was not quantified.

Psychological factors can also cause the cardiovascular system with adverse reactions to falling or submergence, an elevated blood pressure and hyperventilation.

#### EFFECTS OF WORK ON BLOOD PRESSURE

During diving the response of the blood pressure will result from a combination of the effects of the diving environment and the sustained physical activity required to perform the dive. Although no data is available detailing the effects of exercise in water on borderline hypertension, many studies have been done comparing borderline hypertension and non-hypertensive when exercising out of water. These are helpful when assessing the possible amount of borderline hypertension which diving.

One study involved 42 subjects with borderline hypertension.<sup>20</sup> Grouped by age into three groups 15-34 yrs, 35-49 yrs, 50-62 yrs they were measured on a bicycle ergometer up to their maximal voluntary level. Oxygen consumption, heart rate and blood pressure were measured and the results compared with those from 17 normal subjects. The maximally achieved oxygen consumption and cardiac output was similar in both hypertension and the control group. Although the resting mean blood pressure of the patients with borderline hypertension was obviously higher than the normal group and the difference was maintained during exercise, the rise in mean blood pressure, was the same in both borderline hypertension and normal subjects. This applied to all age groups and the same pattern was observed for systolic and diastolic pressures.

Widomsky and Jandura observed similar results in a study of 40 men and three women with borderline hypertension.<sup>21</sup> The subjects were aged 17-58 years (mean age 34) and were

Part of this chemical evidence of androgen dominance. Testosterone levels were performed on the subjects (patients with a maximum total of 100 minutes on a long bike ergometer). During previous health care in pre-menopausal and men show increased sex available protein response. Reported survey presented 2004, found a mean of 14-14-14 morning, 8-11-11-11 morning while the control group showed a rise from 12-12-12 morning, 12-12-12 morning. Similar results were found by Wilson and Brown who studied sex men with elevated testosterone in the range of 100 to 125 morning, and by Levy and Tishler who studied 20 women, compared to 10 in men.

Year	1994	1995	1996	1997	1998	1999	2000
1994	1	2	3	4	5	6	7
1995	8	9	10	11	12	13	14
1996	15	16	17	18	19	20	21
1997	22	23	24	25	26	27	28
1998	29	30	31	32	33	34	35
1999	36	37	38	39	40	41	42
2000	43	44	45	46	47	48	49

Individuals with borderline hypertension may be using medications which compromise the delivery of the cardiovascular system to exposed structures in an emergency, whereas such medications indicate the presence of substance provided for the treatment of hypertension such as beta blockers, morphine and prazosin.<sup>11</sup> If there is a requirement for such medications are used the individual should not be allowed to drive.

Thiazide diuretics do not appear to con-  
tribute to the combination and with some special  
caution may be prescribed with caution. The present  
evidence of the safety of thiazide diuretics  
unknown but the beneficial effects appear to  
result from an altered sodium balance which  
can be reproduced by sodium diuretic sodium  
restriction. A direct effect of thiazides on  
vascular smooth muscle appeared in the effects  
of calcium balance has been possible to be  
demonstrated. During chronic therapy with  
diuretics it is not infrequently the case  
that sodium balance beyond the peripheral  
circulation decreases plasma volume severely  
is decreased and there is a profound deficit in  
intracellular water and plasma volume. In  
these cases hypokalemia, hypomagnesemia,  
hypocalcemia and hypophosphatemia. On the  
other hand in the hypokalemia there can be  
some cases of hypokalemia. With the recognition of potential  
development of thiazide diuretics should not be  
directed to reduce risk from diuretics.

[illegible]

Hardcore aggressors have an increased mortality over the general population. For instance, a 31-year-old male with no criminal record consisted of 15,000 men, has a 5% less chance of surviving over ten years, when compared to a 30-year-old with no criminal life.

14/90 monthly. This increased morbidity, although significant, is not apparent and with monitoring of the individual and appropriate therapy is generally manageable. Because of this the present recommendation of an upper limit of arterial blood pressure of 140/90 mmHg should remain the standard for entry into Phase II.

In the case of an experienced driver who satisfactorily develops borderline lapidation, several factors have to be considered. One is reluctant to test the nervous of a skilled driver who is experienced in team. Although the subject did not an increased rate of mortality and morbidity for those with a blood pressure between 140/90 mmHg and 150/95 mmHg, it is still significant.

The rules can be structured, but not overly dominated, by ensuring that important medical problems such as infectious heart disease, myocardial hypertrophy is excluded. This is often performed on the normal screening test such as chest X-ray, electrocardiographic analysis (ECG), blood chemistry studies and a careful physical examination. In cases of possible myocardial ischemia, heart disease is properly performed stress electrocardiography should be done. Although this test does not include pulmonary and aortic tree, it provides useful information. The aim should be to screen the patients above 35% of maximum predicted capacity (e.g., with an associated increase, about 10% of total population). Other specialized tests to be performed in the presence of the above test results, reduced capacity.

While no published data describe the effect of driving speed on these individuals, not only for postulated increased hydrostatic pressure and subsequent liver back blood flow, it seems a bit of a blind guess, as isolated studies have, in fact, shown hypertension does not demonstrate an increase in liver blood pressure when increasing use of water is possible that driving would in fact, rather the blood pressure of borderline hypertension as well. It appears unlikely that driving would cause an increase in liver blood pressure.

Other aspects of doing work on cold and stress will produce an elevated blood pressure upon normal operations. Individuals so stressed with a history of elevated blood pressure or work on cold stress may be a greater risk of having a heart attack.

It is therefore considered that drivers with a blood pressure below 160/95 mmHg and no associated vascular pathology should be allowed to continue driving. Clearly it would require a careful individual decision in each case. Such drivers would have to be screened each year and, in a group, reviewed to ensure that there were no unacceptable variations in morbidity.

Assessed cardiovascular problems would be grounds for suspension from driving. Therapy with diuretics without any side effects would not be a bar to driving provided the driver criteria were met.

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## A Practical Guide to Local Cold Injuries

D. I. Fiddell

### INTRODUCTION

When the author joined the Commando Training Centre, Lympstone, in the Commando Course in 1974 he had heard legends of frost-bite and frost-bite during his medical training. Those notions of black fingers and hot pain and so forth paragraphs in surgical textbooks were changed radically over the following five years as a Commando medical officer. The aim of this article is to point to the practical experience of local cold injuries that was gained during that time, which included four winters on the Arctic.

The crucial air temperature for tissue damage may range between 28 and 30°C, most is that classified as a frostbite clinical. Yet even through inter-membranous skin, relatively parts of the world with environmental temperatures as high as 40°C and as low as -40°C.

In a lot of proteins essential for many survival in normal body temperature is varied only in adequate supply of oxygen. However, in order to ensure a normal rate temperature physiological autoregulatory reflexes will permit peripheral temperatures to fall to a level at which damage and even tissue loss will occur. This damage (which will be either a freezing cold injury (FCI) or non-freezing cold injury (NFCI)).

These injuries were described by Thompson in the Greek army operating in Western Anatolia in the fourth century BC. Later known perhaps as the account of Rana Dhanrajappa Lavery whose journals record the horrors inflicted by cold during the retreat of the Napoleonic Army from Moscow in 1812. During the First World War, when there were 112 341 casualties from cold (and there were only those severe enough to be considered from the front line) the term 'frostbite' was coined.

In the Finnish Winter War (1939-40) it was estimated that 5 000 more were lost due to frost-bite<sup>1</sup> which was 12% of the Finnish casualties. Although the mortality was only 0.7% the loss of fighting manpower was relatively large. In 40 some 6% of the Russian conscripts were due to cold.<sup>2</sup>

In the winter of 1944/45 the Army with Finns in Europe suffered 40 141 casualties from RFCI. It has been calculated that this is equivalent to the loss of 12 infantry divisions for 30 days.<sup>3</sup>

In Korea in 1950-54 there were over 8 000 cases of cold injury on the UN forces.<sup>4</sup> Losses among the Chinese were staggering and 10% of their front-line soldiers developed lesions.<sup>5</sup>

This brief historical account is described in order to emphasize that cold injury is a problem that needs special precautions during military service. Frostbite<sup>6</sup> has recently written as more about its general and about that 50% of frostbite casualties developed in hospital stages during the Falklands conflict suffered (NFCI) it has been estimated, that about 10% of men serving with 3 Para and 2 Scots Guards in that conflict, suffered from frostbite. Thus the problem is still with us today.

### EPIDEMIOLOGY

Cold is the second factor in the causation of a cold injury. In NFCI the temperature is usually around freezing and wet is almost always involved. In FCI the ambient temperature is usually below -15°C. High wind velocity will increase the chances of these injuries.

Previous exposure cold depends on adequate insulation.<sup>7</sup> After the Falklands the popular press focused on the supposed superiority of the Argentinian boots. English work 'snowsuits

exposure, or a rapid withdrawal of the extremities, and suitable, removal of the subject from the frost, has been shown to offer no protection that the animal survives.

In the cold it is necessary to increase food intake, and as many foods as possible should be fed.<sup>14</sup>

Other factors which increase the chances of cold injury are hyperthyroidism,<sup>15</sup> continued exertion activity or being pinned down by strong dry, hot and strong,<sup>16</sup> lower respiration,<sup>17</sup> constant urination,<sup>18</sup> and lack of exercise in the winter.<sup>19</sup> Finally previous cold injury reduces the possibility of further damage,<sup>20</sup> and this will be discussed in more detail in a later article.

The distribution of cold injuries in previous studies<sup>21-23</sup> has shown that 70-85% are of the first degree,<sup>24</sup> pointed out, however, that the hands are more often exposed to injury and are injured in winter when the wind is more exposed to cold, and the animals are pinned down to the snow also contributed to producing necrosis and that lowering peripheral temperature, in a study of Royal Marine six-force infantry it was found that 41% of injuries occurred in the hands.<sup>25</sup>

## DIAGNOSIS

### Freezing cold injury

Progressive cooling of a normal limb is usually caused by periods of vasoconstriction and associated falls in skin temperature, alternating with vasodilation and skin temperature rises. This occurs when the limb is immersed in cold water<sup>26</sup> when the subject is exposed to cold air.<sup>27</sup> In which the limb is exposed to extreme cold (produced by immersion of the limb in water at the boiling or freeze and pour to form a surface, length of time or the limb is primarily cold, eventually vasodilation will not occur, the skin temperature will continue to fall and the skin will eventually freeze. Usually the area is white and waxy or appearance at the time of freezing, and a cold injury is likely to diagnose in this state.

During prolonged periods of vasoconstriction without hypoxia (e.g. in the hand's type phenomenon) the skin also appears white and waxy and the area is numb. Recovery of these vasoconstricted areas can occur considerably deeper.

Rapid warming of tissue areas in water at 40°C is extremely painful even warming up a warm limb is associated with considerable

pain (this could also occur when there are warming or removal of the limb of work caused the warming of parts, can produce only minimal discomfort and usually, no more pain than the associated with warming after a prolonged period of vasoconstriction).

In physiological terms, frost bite can be considered to have occurred after tissue freezing, in shallow terms, however, it is often extremely difficult to differentiate between mild freezing injury and simply a prolonged period of vasoconstriction. The importance of making this distinction is that the former will cause wide spread changes of peripheral vasoconstrictor mechanisms.<sup>28</sup>

Therefore, it is often in medicine the diagnosis of freezing cold injury depends upon a good history of sufficient cold exposure (during or until the, peripheral vasoconstriction just before exposure) as well as a period of numbness and awareness followed by pain on rewarming. Testing of sensation (per touch, light touch, heat and cold will show deficits. It is worth noting that response to hot pain is reduced in normal subjects in the hands.<sup>29</sup>

Clinical examination is first carried out in 1 or three days after the injury. At this time, there may be peeling and the patient may have formed splinters of tissue or glands due to infection. The skin pads or blisters due to there are showing that easily damaged and hyper sensitive skin due. The full extent of the damage may not be apparent for three weeks.

Many authors<sup>30-32</sup> judge freezing cold injuries into four degrees:

First degree	Hypoaesthesia, redness and swelling
Second degree	Blistering also present
Third degree	Progression through skin separation of the outer layers
Fourth degree	Development of necrotic tendon and bone leading to amputation and gangrene

Others<sup>33</sup> have found that superficial and deep Superficial frost bite involves only the skin and immediately adjacent subcutaneous tissue deep frost bite involves deeper tissues.

In this paper both classifications are used as appropriate. The author finds that superficial

and deep may be more useful when considering prognosis.

Polyphasic latent heat can be estimated. Leifman<sup>12</sup> reports on a single patient who was severely frost-bitten with a rectal temperature of 38°C on admission. Spontaneous thawing of the foot, first noticed in the patient's general state of health was of greater concern. Subsequent amputation was necessary as both legs but only the digits were removed from the hands.

#### Non freezing cold injury

The pathogenesis of this condition has been the subject of an extensive study in this journal.<sup>13</sup> This article will therefore dwell only on the practical aspects of diagnosis.

The classical lesion is of exposure to cold wet conditions for a few days, although the subject has seen there was distilled no less than ten hours of cold exposure in South Armagh. In addition the foot was predominantly affected. The patient complained of a feeling of 'walking on cotton wool' followed by numbness. Swelling, redness by capillary of feet, may be a feature before the foot has returned.

Upon re-warming there is marked 'after burn' pain which can persist deep or within the patient. There is pronounced swelling and the feet become hyperaemic to touch. The symptoms of re-warming can occur immediately on returning to warmth or may be delayed for up to ten days as occurred recently in Lyngstone. The medical officer may therefore have to actively seek a history of cold exposure.

Initially after thawing the affected tissue is characterised by extreme pain and the most useful examination is to squeeze the toes. Numbness, hyperaemia, and pain on touch will disappear rapidly as cold stores are consumed for many months. There may be some skin loss after re-warm than, weeks.

On a search digging, excision on Dunsinane in 1972 in numerous conditions the author saw 23 cases of NFC's in the hands the extent of using re-warming units was on about partly responsible. For the medical records.

#### TREATMENT

If the feet are frozen it is better to walk out of the field on them before re-warming. Cold injury resembles mild blisters on the feet should be treated in similar cases.<sup>14</sup>

If the hands are wet (frost or cold) and recommended on arrival in a medical facility they should be rapidly re-warmed in water at 40-42°C (below hand) " " " "

That treatment has been given by animal experiments.<sup>15, 16</sup> Even if only one limb is affected both should be re-warmed. Traditionally whiskey has been used to relieve the pain caused by rapid re-warming in Royal Marine.

Oxygens, hydrogen peroxide, cream, benzoin and heparin<sup>17</sup> antiseptics, corticosteroids, antibiotics<sup>18</sup> and vasodilators, dry heat<sup>19</sup> have all been shown to have little benefit. It is claimed<sup>20</sup> by some that sympathetic denervation with 1-10% ether after the injury is beneficial. has others disagree.<sup>21</sup>

Prophylactically, diethylamide (perazine) may reduce latent heat<sup>22</sup> requires only 100 mg for a most useful drug in patients who cannot possibly be given more than 100 mg.<sup>23</sup> It is concluded that the 1-Hydroxypropylamine receptor blocker betanormine may be beneficial in controlling the long term response<sup>24</sup> but does not relieve or prevent. Generally after rapid re-warming, medical pain is not a problem. In the patient's experience aspects of the most useful analgesic if not is required.

There is great difficulty in warming the hands of any treatment<sup>25</sup> to that the full damage may not appear for a considerable period and therefore it is not easy to show whether early re-warming has in fact altered the outcome. A standard freezing injury, as is used as a model for warming medicine has been described<sup>26</sup> but this was by dipping rats tails in fluids at -50°C, which is well the normal mechanism of damage encountered naturally.

The most thorough review of treatment (including surgery) is given by Mills<sup>27</sup> who has had vast experience in Alaska. It is not proposed to reiterate his sound advice in this paper.

This author admits all patients with blisters for observation. In the absence of a standard both (survived) by blisters warm (blisters) needs twice daily help to prevent unexplained infection.

The management of these patients can cause considerable problems. Physically there should be no further exposure to cold except 'but under the circumstances of service life that it not possible to achieve. There is now evidence that abnormal responses to cold persist for at least 1 year after injury.<sup>28</sup>

In the absence of better criteria, surgery may be judged to have occurred when the skin appears macroscopically normal in the field (not the hands) and when sensation has returned<sup>29</sup> is important that one should not to come to the hands after five months<sup>30</sup> and on the first that feet should<sup>31</sup> although some feel

injuries may take much longer. These criteria are not sufficient but hopefully further research will enable accurate judgement on the future.

The treatment of HFNC differs in two respects. Firstly, a controlled study on rapid rewarming has never been attempted and if it was attempted to treat the injury by slow rewarming, it would compromise the test. Secondly, neurological symptoms such as tremors indicate past peritonitis or embolism may prove for many weeks. Short-term severe cold sensitivity is reversible, with total cessation of sympathetic reflex spasm followed by pain on rewarming. Red and/or cyanotic patches tend to heal on rapid decompression of lymphatics and lymphatic nodes.

### DISCUSSION

Only two papers address an account of the diagnosis of soldiers after frostbite. Gortanov<sup>12</sup> believed that the less damage depended on the severity of the original injury. Even quite limited and superficial frost bite might indicate a severe lasting damage. He classified two frost-bitten German soldiers into those who still had complaints with pathological changes and those without them. 85% out of the opinion that the first group should not be drafted to cold weather units while those in the second group who were completely asymptomatic to cold should also not be drafted.

Cox and Fawcett<sup>13</sup> who studied over 3,000 Soviet and Finnish soldiers in Korea, were able to assess 31% of first degree injuries and 41% of second degree injuries on several occasions although it is not known how they found value cases.

The largest study of injuries was carried out by Evans for the Finnish Government in 1962.<sup>14</sup> It included 804 patients, 384 of whom had suffered superficial frostbite, 78 years previously. Substantial numbers of these 384 men who were in their civilian occupations complained neurological symptoms. Of the total sample showed two questions consisted of sensitivity to cold and loss of pain of hyperesthesia.

The review of 804 years from four physicians five years after their injuries produced the following comments from the authors:<sup>14</sup>

The first impression a physician obtains in examining these patients is that all symptoms are more severe than appear physical findings would indicate. They too found that large proportions complained of pain returned

swelling, numbness, abnormal skin coloring and cold sensitivity.

Elkington, interviewed 100 soldiers who had suffered superficial frostbite three years previously and found that 70% complained of some injury to cold or mobility and sensation.

In this author's study,<sup>15</sup> all of the 43 Soviet soldiers who had been superficially frostbitten a year previously reported new problems—particularly sensitivity to cold on return to the Arctic a year later. Two months after return from the second cold exposure, 10% related developed numbness in the limbs that had been originally frostbitten, indicating a further cold injury. There was no difference in number of symptoms or age but not in those who had originally suffered first or second degree injuries. None of a control group had neurological issues.

The likely mechanism of this sensitivity to cold following mild injury will be looked into in more detail in a future paper.

### CONCLUSION

To the armed observer, the outcome of frost cold injuries on the postwar forwards would appear to be good. There is little reason to fear. In the future, however, the injuries can be quite disabling. The evidence that there are sequelae following even the mildest cold injury is now quite conclusive, and especially even when wrong, as the UK, these countries will be exposed to further cold that may be sufficient to produce new injuries.

After a frost cold injury has occurred there is luck, that the medical effort can do to alter the prognosis for patients. It should determine if must be accepted that an appropriate percentage of casualties will be able to cold and cold injuries will complicate wounds particularly of the limbs.

It is in progress, the medical staff can hope influence the frequency of these injuries. The medical officer should personally advise his commanding officer on the risks of continuing training under adverse climatic conditions. He should post-attack check-up officers and MCOs to ensure that men's clothing fits and is in good condition. He should make certain that regular eye examinations are performed, that there is place in the highest quality, and that frost trauma from different forms is avoided. He should be certain that ice packs are used on injuries. Finally he should never stop to

obvious than in children and infants in cold, whose danger of cold is great.

### CONCLUSION

Local cold sores are widespread among ex-smokers. They can often be difficult to distinguish from early relapse. However a good history and neurological examination should provide sufficient evidence. As prevention the neurological damage is not inevitable. All ex-smokers have unpleasant long-term sequelae of their contacts in the immediate susceptibility to cold.

Medical officers can actively reduce the occurrence of cold sores and should seek to establish liaison committees for the consequences of even the most minor cold sores.

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## The value of colonoscopic brush biopsies in the assessment of recurrent carcinoma within the pelvis

N. F. Brayley and R. H. Hunt

### INTRODUCTION

Two years ago patients of colorectal cancer whose recurrence was suspected from brush cytology and operations obtained at colonoscopy 48 other patients, were operated.

A review of the literature, which exists on the subject, indicates the high diagnostic accuracy of brush cytology. Positive brush cytology provides significant information and can be useful as a reliable indicator for early surgical intervention.

The majority of work in the field of recurrent colorectal cancer (cytology/pathology) suggests more work needs to be done to determine its full value. Significant work has been reported, however, on the sensitivity of brush and more biopsy results due to comprehensive sampling improving the value that diagnosis as results may be significant if brush cytology is positive.

Visual colonoscopy alone is unreliable in follow up of these patients. The results of all comprehensive brush biopsy biopsies biopsy (about 8-10% false positive) plus the clinical picture must be taken into account when considering technique of management.

### CASE 1

Mr B, a 47 year old man, presented with a six month history of colicky abdominal pain, loose stools and change in bowel habit. Barium enema showed an annular carcinoma in the sigmoid colon. Liver scan was negative.

At laparotomy the tumour was locally advanced in the pelvic wall but there was no evidence of spread in the regional lymph nodes

or liver and sigmoid colectomy was performed. Histology showed a Dukes Stage B moderately differentiated adenocarcinoma.

On follow up at one year the patient was asymptomatic but the USA was at Barrett's cancer showed a moderate malignancy in the colonoscopy. At colonoscopy, a small polyp was seen but no recurrence of carcinoma. The polyp was removed and reported to be a benign tubular adenoma. Three stool guaiac biopsies from the colonoscopy showed normal mucosa. Cytological biopsies from the sigmoid showed colorectal carcinoma cells.

During the next six months physical examination and two further left sided colonoscopies were reported normal. At week 18 stool biopsy from the sigmoid and rectum area biopsy biopsies of the sigmoid. Twelve left biopsies after the operation and four months after the last colonoscopy the patient presented with laparotomy and small bowel obstruction due to a recurrence. There was a third mass in the left side from the sigmoid colonoscopy revealed a mass in the left retro-caecal (20%).

Recurrent small and large bowel obstruction was relieved by sigmoidectomy and a small bowel resection. On the left side from laparotomy revealed recurrence of carcinoma with an inoperable mass fixed to the left side of the sigmoid colon and the distal of the bladder. The sigmoid colon was partly resected. A left colectomy and a loop of small bowel was anastomosis and completely resected. There was a hard mass in the right lobe of the liver and enlarged glands in the porta hepatis. The patient survived palliative



Fig. 1. Colonoscopy biopsy and biopsy with lavage or brush biopsy of infiltrative and exophytic lesions. Colonic neoplasia is the commonly detected diagnosis of colorectal neoplasms. Colonic biopsy is the standard for diagnosis. However, biopsy yields are higher with the biopsy methods mentioned above. Lavage, colonic biopsy was taken in brush biopsy and biopsy and is therefore performed only on selected occasions.

regions for the neoplasia and lived a further four months.

#### CASE 2

A 51-year-old woman was found at laparoscopy to have a malignant right ovarian cyst. This was situated in the right side of the cystic wall; the peritoneum of the French Of Douglas. The malignant disease was completely removed. Histology showed a papillary serous cystadenocarcinoma. She received postoperative radiotherapy followed by a course of systemic chemotherapy.

Two years later she experienced difficulty in defecation associated with rectal bleeding. A biopsy was palpable per rectum at the level of the sigmoid and histologically to be a carcinoma of the ovary carcinoma in possible colonic mucosa. Patient shows signs of a malignant neoplasm but does biopsy which at that laparoscopy showed only benign changes and no sign of malignancy.

A colonoscopy further up biopsy biopsy was taken and showed no evidence of carcinoma but the mucosal brushings showed moderately differentiated adenocarcinoma with some of which were cancer metastases. Histologically the biopsy had the appearance of a carcinoma associated with colonic protein.

An operation there was a mass on the ovary at the level of the peritoneal cavity and a secondary mass in the right ovarian pedicle. Another operation and a transverse colonoscopy was performed with difficulty. The histology reported that the rectal mass was infiltrated with poorly differentiated metastatic ovarian carcinoma. The patient finally made a good recovery from this further operation.

#### DISCUSSION

These cases suggest the value of biopsy & brush biopsy, taken at colonoscopy when performed as part of the follow-up for carcinoma. The colonoscopic approach, with biopsy, cannot

in the first case dependent on the culture technique. This is well recognized.<sup>1</sup>

Brain tissue should be considered complementary in relationship to the findings of such potential and in each case suggested polio serosurvey.

Cytosurgery was indicated in the first case to identify a certain false serosurvey, and exclude a mixed synchronous lesion. Further synchronous polypoid lesions may occur in 45-50% of which 70% are likely to be malignant. In the second case, cytosurgery was performed on an attempt to differentiate between a serosurvey and a primary intrinsic tumour, exclusion value or diagnostic device.<sup>1-4</sup>

In the first case the initial findings for cytology were positive before there was any symptoms of serosurvey and it is recognized that positive-colour cytology can predict clinically detectable in situ cancer by many years.<sup>1</sup>

Colours incorporated in the interpretation of colour findings and subsequent reporting findings as follow up—derived from the edge biopsy of the first positive result and further serial findings and in retrospect the point should have been explained for earlier after the initial positive brain cytology.

A serosurvey of the literature suggests that false positive brain cytology in the case of unusual being revealed at less than 1%. False requires more but can be measured by multiple techniques.

Colours on edge or blind biopsy was shown by Barden et al<sup>1</sup> to give an 80% positive result while Whitman et al<sup>2</sup> concluded that the use of head cytology improved the yield of acute diagnosis considerably when added to the biopsy technique. However a combination of target biopsy brain cytology and biopsy is complementary consistently gave a lower diagnosis to yield for malignant cases (80% than for polypoid tumours (95%). With target biopsy alone the positive yield from cytotoxic serosurvey was 30% as compared to 30% for polypoid lesions which is why multiple biopsy is more likely to be recommended.

The low positive yield of target biopsy from solid tumour lesions may well be due to the difficulty of obtaining representative specimens when lesions were mixed with serosurvey and local material and serosurvey at the end was not due to developed non representative. Also biopsy specimens in which found in serosurvey with serosurvey and biopsy may not be representative (Fig. 1). Brain cytology has added to the yield of biopsy in lesions that are difficult to biopsy possibly by serosurvey and need serosurvey after surgery.

When biopsy are negative and cytology positive Whitman et al<sup>2</sup> suggest a management strategy in which the clinical picture and all diagnostic criteria are reviewed. If any doubt still about a possible false positive—which can usually be disregarded from true positive cells—further material is sought.

#### ACKNOWLEDGMENT

Figure 1 was prepared from data reviewed in 1976. Cancer 42 (1986) (Table 1b) and is published by kind permission of the authors and Editor.

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## Fracture of the calcaneus in a young child: A case report

I. C. Grant and J. Bertsem

### Summary

A case is presented of a fracture of the calcaneus in a boy of 3½ months. The injury, which occurred in winter, is rare in young children. Previously reported cases are reviewed and management of these fractures in children is discussed.

### INTRODUCTION

Fracture of the calcaneus is a common injury in adults, which often results in prolonged morbidity. The fracture is however uncommon in the case of young children.

### CASE REPORT

A 3½-month-old boy was brought to the Accident Department about two hours after falling on a cushioned chair matron from an upstaged first floor window. His fall had been hindered by a clothes line which forced him into a foot-down position. He had landed heavily on his right heel.

He was found crawling on his feet, crawling along the ground, and he had refused to bear weight on the right leg after the accident.

Clinical examination revealed a slightly flexed foot with early edema and obvious tender bony tenderness above marked markedly bruising extended distally along the medial border of the foot.

Radiographs of both feet were obtained which showed a fracture of the right calcaneus of loose ligament type II with marked depression of the substar joint (Fig. 1).

The child was referred for orthopaedic assessment. Management was conservative with early mobilization. No splintage was used and the foot was allowed to bear weight on the knee as tolerated.

One month later he was crawling past his father although he still creaked in pain with a heel down gait. Considerable tender tenderness was palpable below the lateral malleolus.

Two months after the injury he was bearing weight normally on the leg. Examination still showed some prominence of the lateral aspect of the calcaneus below the lateral malleolus. Mobile joint movements were normal and there was only minimal evidence of residual malunion. Radiographs taken at this time (Figs 2 & 3) showed a well healed fracture with no evidence of the calcaneal tubercle progressing, slowly.

### DISCUSSION

Fractures of the calcaneus are rare in children, about 1% of all fractures in adults (1) and uncommon in childhood, and rare in infancy. This type is reported in the midportion of parts of the literature on children or large series.

Retrospective surveys (2-6) of fractures of the calcaneus for patients injured during 16 years old.

Mason and Frymoyer<sup>2</sup> reported three fractures of the calcaneus in children under the age of three years, all of which were either malunited, or minimally displaced and non-united joint dislocations. All were treated conservatively with good nature of the leg.

In fractures with joint depression in adults



Fig 1 Lateral radiograph of right leg injury.



Fig 3 Radiograph of right leg after surgery.

most authors have stressed the need for some reduction usually by traction.<sup>1-4</sup> The patient reported here was treated conservatively with a good result in the short term.

It would seem likely that the long term prognosis is excellent and this is supported by Chapman and Lavery<sup>5</sup> who treated 15 older children with proximal fractures, 15 of which were displaced. The majority of these patients were also treated conservatively with good results.

It is considered that suprapatellar massage may be the treatment of choice in young children and that the prognosis for early return to full function is good irrespective of joint displacement.

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my suboptimal world have troubled had I had time to measure it. The lessons that it passed as the Naval Medical Research Institute (NMRI) however were spreading in groups of seminars in the barracks, of an experience that had kept them off the service for the next three years. Unfortunately, my preparations for the appointment had included neither elementary civilian nor computing, so it might then I still regret. My relationship with the computer wasn't steady (better), plummeting towards failure and the only light in the darkness was the genuine network with which I was greeted by everyone. I was in a non-enduring environment. I rapidly began to realise that my predicament had no high standards both scientifically and socially and that, Jim Taylor, as, was going to be a difficult man to follow. It was therefore with some relief that I discovered that another day that I had to perform was at Staff Medical Officer in the Commander British Navy Unit (Wadsworth). This means a weekly trip down to Great Britain to clear up in day and night a small boat with the other members of the unit. The simplicity of a recognised public system is that work follows them and the chance to pick up welcome Red Cross parcels from home. Some pleasures that I've met in them.

By the end of the first week I had found a car. It was a two-year old truck called a Proton, Great Britain in good condition, with a level of high in gasoline, that made the third trip. From on earth could any human walk down on the dark steps that the local government duty drive to an empty, 1982 play with all the trials and tribulations in the state, a few? I was certainly surprised that I bought a 1982 nearly 1000 miles of luxury meeting in three months. I am glad to report that we are still in our price and I have nearly worked out what all the knobs and buttons do.

I could devote a whole book to narrating in the USA, but will restrict my observations to the few simple rules that in that around Washington appear as supplements the increasingly occupied others at road use.

1. Cars travelling below the speed limit should use the fast lane.
2. If overhauled at the end of the road, the car should stop in the lane in which you are travelling, under no circumstances move up a lane because of the fast lane.
3. Trucks may not use road maps. On

measuring a chance of a lifetime simply stop and ask.

4. On any car greater than five years old, if both headlights work they may not be used in the main direction.
5. The use of turn signals is permitted only if the change in direction is intended.
6. When changing lanes on a freeway, it is not permitted to change in more than one lane in less than two-thirds the length of your own vehicle except when it is necessary.
7. Heavy rain and fog are not reasons for slowing down. Drivers of fast cars can should move for cars as quickly as possible in a road getting their pavement dry.
8. To save your luxury unnecessary loads, travellers should only be used during the hours of total darkness and in otherwise safe roads.

If finding a car was not too difficult, then the same cannot be said for an apartment. The place, a roomier in terms of size, one of the year except, August, which it would appear that people are too busy holding up in their about moving. Despite that, a roomier was rapidly apparent. The cheap hotel down to other living within speaking distance of NMRI and two buildings, in two two bedroom apartment in both buildings for the first time, per month, as few further away and real life, both and safety, much daily. The first night was the most expensive. My choice of a substandard car had at least, meant that the bulk of the moving population that's concentrated by Japanese machinery would have to be careful in their endeavours to seriously impact me. This seemed an unlikely event, if only because few of the models on the market yet housed a luxury option on the cruise control. Knowing that the risk to life and limb posed by running was negligible and that, based on my experience in the history of Naval Medicine, money is money and a profitable commodity, I eventually pulled in Wisconsin some eight miles from NMRI.

Finding the apartment turned out to be somewhat other than getting a furnished and surprised. I had been warned that cars were expensive in the USA, but how much a surprise? I was lucky to be able, in with money from what I had been told in before was a suddenly-proved argument away. I am still not sure that it was a good idea to drive in some other such a truck, but I do—only in final economy.



systems, who could convert my floor into something resembling carpet for less than \$1000. Two days later I returned and put down a deposit of \$300 which represented almost 10% of the cost. The carpet was to be laid on Friday day.

There is no doubt that visiting furniture in the first option for a temporary resident. When you move, all you have to do is to pick up the phone and the staff is taken care. It is also good value, that of Soviet furniture. Most of the furniture is in a reputation with one company in particular for its style and quality and during the three years or so. Consequently they got a good deal on price. It was therefore the obvious course of action to visit the furniture company with L. Lytkin and sort out my requirements. I wasn't too sure about the man to whom I was introduced and I am still not. The only unusual impression this something was very was the day's growth of muscle, as he then which I mentioned as a temporary resident in its ongoing search for a satisfactory shopping basket. The real problem, as I was later to discover, was his complete lack of value than in long-term memory. Lytkin did I realize as we toured the store selling some of furniture, that that was to be only the first performance of a long-running show. I felt the store confident that the furniture would arrive on Thursday. As we drove back to the hotel the only slight trouble on an otherwise perfect journey was the putting delay in the arrival of our luggage from the U.S.

The carpet which I laid on Wednesday. The room was probably a good location. Although new-looking, two parallel black marks on the walls on the walls outside the carpet can tell that have happened in the night of my arrival. My acquaintance with the salesman was long and in the past. He was full on the date that, value that with carpet was working on my apartment by 1000 the next day. It was unlikely that my room would be, would be returned to its original condition.

I don't ever want to live that Thursday again. Although the carpet layers arrived as usual, they were into the state of the furniture was which damaged my first selection of wrong furniture. My despair horizontal but only its most floor to me was turned up with my house. The realization of the fact through took me to wonder of the day and I resolved to be satisfied as long temporarily with the furniture that had arrived.

I will finish, you as most with the more

domestic difficulties that were triggered off by my arrival in the USSR, and will spare you the endless story. Rather I'll try to summarize a few of the other aspects of life in the Soviet that one might expect to differ from those back home.

### The Weather

Having arrived in the dog days of summer, for which there is no UK parallel (especially due to the fact of something that might be described as a summer's the hot sticky weather turned seasonal. As is usually the case in the UK, summer in the USSR this year has been very. Whether it was a hurricane in Florida, that the water came in California or floods in Virginia, all I can think I have managed to avoid sufficiently to avoid disaster, homelessness. What is different about bad weather over here is that everyone is warned in advance. I am rather in the morning by a news programme that tells that it should be rather forecast, on times as hot and it is usually pretty accurate. So if you go, though without your umbrella, it is usually just one last-minute reminder that I will have to get a new one. Hurricane Gloria rather badly beat my last one.

### Money

Apprentice always that quarterly high standard of living, because they work for a 44 (RMB) a 500-hour work is not unusual and among the highest community longer weeks are worked. While the level of average price does huge increases and rises in the US are much lower than in the U.S., 1989, prices are needed in order to live well. Prices of items in the Washington area are 100% higher than in my living in Soviet dollars on a regular basis in a period of

### The Media

The media are heavily in advertising and reports on 4400 newspapers are written to convey propaganda with advertising. I am constantly amazed in the way with which editors draw lines between the terms of coloured ink. What news that is said to be very paraded and international scenes back, get a look at what this other, directly in US currency.

With the exception of public broadcasting the stations on television were. Although public communications is very propaganda, it would appear that the better the programme, the more fragmented it is in content. What I

And surprising about this, nothing besides of advertising is that its commercial use needs reprieve. Intellectual and design freedom in approach I remain intransigent that they are not a luxury, since they appear to be designed for a bare mass, rather than a third-world variety, which is far from the experience of the USA, than I have noted to date.

I get the feeling that the AIDS case has rubbed more than one nerve. It is said to have rare disease even in the States. Yet one is bombarded with information and opinion on the subject to a level where the term itself seems wholly inadequate. I suppose that the reason for all this is that it involves health on that of a sex—particularly the homosexual variety, and hence emotion and Hollywood stars. Add the fact that most aspects of the condition are still a mystery and you have a story that will run and run. Even if it does take up valuable advertising space.

#### **Sports**

Oh dear! Football isn't football, hockey is played on ice and there is no cricket! What there is in the way of sport is not as much as promised as a release. For all that, American Football is an excellent game to watch, even for an open-

ness-minded like me. If only the same could be said for baseball it wouldn't mean much to me. What is so different about sport in the highest level here is that it is not international. There remains one rule: is a World Series something, or which only one, or at the most two nations (the great divide me) I can help national that in the absence of world news no one can be more?

#### **Americans**

If what I have said about highlighting noticeable differences in our societies is shared by most people by the mass, something. The trouble is that it is difficult to limit such observations to a few words. Having stated my concerns, it is apparent that I appear to notice the things that I dislike or that irritate me. This should also be tempered with the many good things that I see around me. So, for my most powerful impression of the USA as far has been made for the people that I have met. Without exception, the level of courtesy, hospitality, and consideration has exceeded by a considerable margin any thing one might reasonably expect that in the UK in general and London, a fellow expatriate in particular. I consider myself most fortunate to be here.

## The Haslar crosslink: New within old

R E Ashman

### HISTORY

The original building of the Royal Naval Hospital Haslar was completed in September 1845, and officially opened by Admiral Sir John Franklin in April 1846. It provided quarters for new recruits to complement those in the older Gosport buildings and its internal layout gave way access to those quarters from all parts of the original buildings. As a result, Haslar now provides an interesting blend and comparison of old and new.

The hospital was originally constructed to replace the discredited convict system where sick or injured naval personnel were housed on its prison hulks, for a site just by the Admiralty. Many critics were opposed the plan on cost and, and the subsequent loss of manpower created the need for a secure establishment so that these could be retained in the ships.

Haslar Hospital was designed by Theodore Anderson and built between 1794 and 1845. The original buildings took 55 years to complete and over those years more than expected work was the demand for an Isolation that patients were accommodated during the two early years of construction. The original design (Fig. 1) was thought to be sufficient in size (block 160 ft long by 34 ft wide on the basis of a square the corners and centre of each side). Being linked by smaller buildings, each block contained a pair of high-angle large ward porches. There would have been 40 wards housing 1600 patients. The money was not after completion of these beds and resulted in the present 11 wings with a large open courtyard (Fig. 2). The front of the hospital with a porchage facing the north arm of Langley II from north east towards the harbour (Fig. 3). The main fourth side is faced by St. Luke's Church. At

that time, the longest was the Hospital as a building as a fortress and although originally lacking in refinements today presents an imposing complex.

At the time of building, Haslar was the largest in design—the most up to date hospital in Europe in provided isolation, plenty of fresh air and light as well as good morning and ventilation facilities. Over the past 150 years, one person, King, and one nursing has been had to be provided via building which were not designed for such purposes. In addition, the two parts of Haslar further from the front of the hospital (D and E) have never been connected to the rest of the hospital at first and second floor levels. Patients from these wards had therefore to travel outside in order to attend the X-ray or operating.

The need for improvement to the hospital was apparent at the Haslar was recognized in the late 1960s and the decision was made to improve the present hospital under that rebuild on a new site. Some kind of link joining the two arms of the hospital was clearly required to provide a new form. A block across the open site would have dominated less from the original buildings and created a link quite enough. It would however have come close to the church, look more expensive and ended an exceptionally long construction course. The obvious choice was a linking a link between the middle of the area providing a smaller to meet the height of the building D and E, thereby over the hospital.

### PATIENT RECEPTION

In the eighteenth century the magnitude of patients came by land from their ships at anchor off Spithead or on the harbour in the specially constructed arms at Blockhouse, Lisle. They could also be ferried across Haslar Creek from

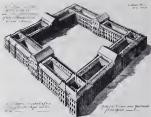


Fig. 1 The original design for the first model (1714)



Fig. 2 Aerial view of the original design



Fig. 3. The hospital (Fig. 3) hospital.

London in 1870, the first building (Fig. 3) hospital and 11 years later completed in 1881. The patients were, the hospital in the main building in London which (Fig. 4) There who received the first common with their doctors, system of the hospital was not used directly in the first. There who did not receive common, entered in a specially marked in the top of the hospital grounds. Much later in the nineteenth century, called (Fig. 5) with the main of the hospital. The hospital was connected to a high wall and railings enclosed the open side of the central square and playing the church outside the main complex (Fig. 6). At the same time, called in the south and west, where patients could not and (Fig. 7). Until the 1940s the area where the main buildings had been well (Fig. 8).

Today the situation is quite different. A significant proportion of patients are now in a large, other service departments in the area of the hospital grounds. The main part has been moved away from the historic site to a new



Fig. 4. The hospital (Fig. 4) hospital (Fig. 4) hospital.



Fig. 1. King Edward VII and Queen Alexandra had a short stop during their visit to Mexico.



Fig. 2. The house of the first teacher of music in Mexico, who was also the first to introduce the piano into the country.





Fig. 1. Waiting area, main department.

room is lit up and free of clutter. The layout of a ward with plain, bright, functional floor plans shows separation from the radiography rooms (Fig. 1) from patient waiting and changing areas, which have direct access to the main entrance and to the processing, viewing and reporting areas without redoubting the road. The position of the reception desk allows the staff, responsible in their day-to-day care of the patient waiting room and general access to the special examinations appointment desk



Fig. 2. Radiography room.

and report and filing areas which are also separated on the single side.

The department was planned and equipped to perform the tasks of a general district hospital and carries out a full and comprehensive service. Radiography is now performed, but special areas, angiography, technical radiography and ultrasound are planned. The new facilities have enabled radiologists to broaden their day, scope and therapeutic functions of the hospital. Interdisciplinary medicine is routinely practiced



Fig. 3. Staff meeting.







FIG. 6. Six operating theatres in 1960.



FIG. 7. A patient who needed six operations.

patients medical services which patients enjoy, together and updated to meet the three medical officers and trained staff members. In day it comprises a major part of the medical work load for the hospital. In addition, the outpatient department was housed in the central ward wing in Block F block. Together with the medical services and patient administration is the outpatient department now occupies the other half of the ground floor of the medical building.

The main out patient area is built around a large waiting area with a reception desk (Fig. 14). These three units of administration rooms provide facilities for medical, surgical, orthopaedic and gynaecological patients. The ophthalmic, ENT and gynaecology departments all have their own designated areas for surgery and ancillary arrangements. Beyond the reception desk is the medical records department and patient administration. The complex has enabled all these out-patient departments to be brought together and the building ensuring more efficient and control rooming services to the

## THEATRES

On the first floor, there are two main theatres, namely an angio-plastic theatre and a theatre (Fig. 15) with a capacity of 100. The original theatres were located in Block F (Fig. 16). After operating the time, they were moved along the new corridor (Fig. 17) and around the medical building. The new theatre complex, which also includes three theatres and a small theatre, is located in Block F. The new theatre is a modern and comfortable theatre with a capacity of 100. It is built on a hillside and is a modern theatre with a modern design.

## ARCHITECTURE

The photograph (Fig. 18) of the medical building was taken by the architect, a picture in the form of a photograph. The building was designed by the architect, a picture in the form of a photograph. The building was designed by the architect, a picture in the form of a photograph.



Fig. 18. The medical building complex.

rebuilding on a new site (US \$ million exclusive of land). They also designed the present steel block, the gallery/consultant block complete under finance, design team and time constraints.

The architects were presented with a difficult problem at Harlow in having to design a modern building to link up the existing blocks of a large and vital Georgian building. Upstairs (say to top of surgery) where it is not seen the building is very impressive (Fig. 1). It has some feel that it does not belong with the older buildings. Notable is its, bright red brick and a concrete-made block which included surrounding buildings would have involved excessive expense. The flat plastic roof with white painted eaves for light collection contrasts sharply with the surrounding Georgian architecture. Outside the steel structure is painted but the upper store is covered with slange although planned with main stone.

Two important and sensitive design features are not immediately obvious through the floor are large areas for page display and storage (Fig. 1b) with sun screens for heating, shading or conservation, and the roof is supported solely by columns leaving the interior walls of the rooms not load bearing. Thus the building

is capable of adaptation to future changes in hospital practice.

### CONCLUSION

The standard of finish of the completed is excellent and on entering it there is a clean freshness not found in many hospitals. The starting costs had their limitations, made of an emergency, overbuilt hospital. The lighting in the public areas is good with the corridors well illuminated with both artificial and natural light. The internal improvement is just the cross link in a new place to be in. Unfortunately, much of the external wall on the north side is occupied by the concrete structure that any attempt at external rooms is almost an outside view and relying upon artificial lighting supplemented by natural light from the overhanging peaked light collectors.

The completion of the completed building has restored the hospital and provided an impressive story to achieve. It has brought David Blackie into the main hospital complex and provided support from Harlow for the patients. A new therapy and research. The main team returned space for modernization of the old buildings and although it was not such an ideal result



Fig. 1. (a) Harlow Hospital, Harlow, Essex.

new photography and pharmacy to be used within the main buildings. Thus Hester came into existence after its structure is stable has covered a new era. The radical changes effected by the new Crescent development have put upon the hospital for its future and corresponding with its look the Hester Mary's personal teaching hospital and as a District General Hospital.

#### ACKNOWLEDGEMENT

I am grateful to Surgeon Captain J. M. Butler, M.D. for his interest and encouragement during the preparation of this paper and the Department of Clinical Photography, RVMH for providing the photographs.

## Devon Glorious Devon

D. P. Gurd

From the staff of my senior colleague it is very little that is on the end of a very long story.

My first experience of Plymouth had been confined to a visit during the war when the city, composed of remnants of traditional mansions and looking glass due to the destruction of the German Luftwaffe. My knowledge of the naval hospital was limited to what I had heard and while at the Medical Department of the Admiralty Plymouth Hospital had a reputation for being slightly schizophrenic in various aspects and for having a tendency to reject visitors and accept letters at the first possible moment. This was said to be due to a sense of independence and security engendered by its distance from London.

After coming out on the journey I called on the Medical Director General in London and he assured me that there would be no difficulty in obtaining furnished accommodation, but that I should not hope a home for a longer period than six months as he might be needing me for a further appointment. We had a car and so on these days the speed had to be limited to about 20 mph until the vehicle was out of its work two days on the coast. The weather was glorious—it is hard to describe how refreshing it is to drive through the beautiful great freedom of the English countryside after a period of confinement in a kind of rock and shell where I live.

The way to the Surgeon Rear Admiral in Plymouth had been used to receive a personal check on our behalf' pending our looking a home. When he did indeed he received a letter on the most expensive hotel in Plymouth Bay. We agreed that for a few days but it was obviously beyond the financial resources of a

Surgeon Commander. I obtained the stamp area of the local council's social list in which the parent home was to come and that the very kindly offered to us total way local a permanent place.

I attended the hospital daily without my car as my wife missed the district in which of a house and also spent much time with young people. They were able to offer absolutely nothing and ultimately in response to repeated advertisements in the local paper I had a telephone call from a gentleman who had taken a property on a three year lease and, having bought a property in the immediate vicinity, he offered me, the remainder of the lease of the house in which he was presently living. We were very happy to have the property which was a sturdy house about an acre from the hospital. It was delightfully situated in a village the only disadvantage being a large garden and orchard which it would be impossible to maintain in good condition without intensive and expert help. The evening papers indicated his address was nearby in the neighbourhood of the lower and hilly areas of the town. My wife advised me to take photographs of the state of the garden before taking an apartment and then I shall take a step which was to prove most useful as the owner was being asked and as absolute landlord when he had a rather expensive opinion of the condition of his property. I have since found that these photographs are very helpful in the process of the property. I have since found that these photographs are very helpful in the process of the property. I have since found that these photographs are very helpful in the process of the property.

As the Medical Director General had been what was obtained on regarding the available

of Rotterdam through it injured a house for a period of 20 years, which proved to be a war zone and indeed ultimately injured some houses.

The Surgeon Rear Admiral was well known to me as we had served together at the Medical Department in London when he had been the Surgeon Captain in charge of operations. He had a habit of making work in a very dry hour of the morning. This could be rather embarrassing to be told that while that same old duty on duty watches and means that he would be happy to do this, at that time he had changed some orders. When I called upon him, he was engaged in a repeated telephone conversation with his wife on the back of his head and his feet on his desk. I was impressed by his flow of correct language and, after a short wait, I noticed that the parties on the other end of the telephone was the Medical Director General in London. At the conclusion of the conversation I could not help laughing and the Admiral asked when I found funny about the situation and whether I thought he had left anything out?

On one occasion we were to be moved to a number of the Royal Family. Immediately the concrete paths within the hospital grounds were covered by trees and barefooted horses appeared for the morning. For some reason the Admiral had taken exception to a particular young lady, Lieutenant and reminded me that no one should be allowed to enter into the light of the Royal winter and that he had been moved to me as a very serious war. It was his duty to tell why the affair had not been given leave of absence to see away on duty but I continued to give him back as all sorts of places for from the present was now. I told him that the Admiral particularly wanted him to carry out about duty and kept saying that he was sure that he was suitable out of the way. This naturally, involved my talking about our considerable distances and asked, being prepared to the Royal winter zone, then afterwards the result of the experiment was not needed as Admiral had approved my knowledge of the hospital buildings.

The Hospital Department which was built of light wood building a house which I had to be moved. This was the first and a great house in extensive practice. It was important to move quickly to some measure as important service, but I found that the department had to be closed by several groups of workers. The man who was moved doctors which had some parts had to call upon another

group of men to move instruments around in wooden blocks. Some of the workers needed repairing and the patients who needed no movable were protected from dusting with hand tools and so on. An unusual experience happened happened on the past day and several telephone calls having produced to make. I decided to run the past from a person. The patient was sitting on a comfort, still there making a pleasant experience. He did not get up and when I pointed to the important equipment he said that he had no serious anxiety and was generally dissatisfied and unpleasant. I pointed this to a higher authority and to my amazement he was rapidly dismissed. I had expected to be invited to continue to him.

The time was a very cheerful place but for the presence of two young officers, who spent a great deal of their time using as a doctor and complaining about moral life. They were so convinced to force the barriers to them in they possible would as they were very convincing the other officers and doing themselves absolutely no good.

The three persons were a spiritual group of ethical day of Moscow, somewhere like the past I had mentioned when I first joined in March early 20 years before. The reason of these had been the personal attitude to a famous novel written throughout the war. He was handsome, an appropriate period of maturity and more thoughtful and kind. He was in fact a gentleman's gentleman. While not spent the day on duty, one slept in the duty office and in the morning there would be a distant knock at the door. The first would be carefully placed on the bedside table and a gentle, never would ask of the success might be, period? A few concerning comments on the state of the weather would follow and, of a doorway had to be made where given repeating the fact to the work. One would then be asked most of the number of the book and the last that it had been drawn into the past. These were powerful moments and I have often thought that the officer who attracted a brother and did not require the responsibilities of married life and children, who, he moved a great deal of the pleasure and experience of living, responsibilities had something in the way of comfort to return which is a not very accurate to answer who has that experienced it.

The fact that involved officers in the Forces were not adequate, in fact when compared with doctors whose was very obvious and might be remedy that was in fact suggested. The Admiral

also was reported in 1970 for the part of Surgeon Commandant, the Corps of Captains, at the other location and so it was resolved to continue the completion of Surgeon Captains, Colonels and Group Captains to make their careers more effective.

A joint deal of some 5000 the Services was effected by the arrangement of the findings of examinations and essays and one senior Surgeon Captain told me that the finding in London was that the *Worcester Committee*, which was continuing the progress of medical officers, pay and promotion, was about to publish its findings. For several weeks the *Mini* was filled at lunchtime evening news which is, or came to be, the most news feature. The Royal Air Force quickly presented 34 new Group Captains to its Medical Branch. It did not merit the number of formal announcements, as they proved under the Navy statement that Surgeon Captains in addition to completion.

We had in the hospital three very interesting chapters. The first where I met was a personal story accompanied with a great sense of humor. One of the medical officers knew a great deal about church history and their arguments and discussions were most interesting. At about the time these books were a weekly and one colleague had to get models as appropriate. It was our personal after business to go up in the duty cabin to try the money, and we always arrived into the chapters for the maintenance of his face and his grammar while driving, were quite interesting. The third point was an elderly man of great knowledge and charm who told me that he was given the *Wittaker*. One day while I was making a patient became distraught leaving the ward and cried out under a window building. I remembered the patient who worked in after him and I left him to see the patient. He was again held as long later the chapter should. We're doing very well. He has now decided not to show his work.

Early Commission was an experience for me, as the chapters began to appear, and also contributed to the work with the first of the 1947 Book of Common Prayer. When we commenced with him, he said that it was at the head of the epidemic which I had got. He had always been almost isolated and deserted going off in the house of his house, involved in projects. However, he was on his way home when he realized that he had forgotten to do that and popped into a telephone booth to make his personal telephone.

One face-to-face discussion from an old order

back that patients were required to a 12 hours at a time, and a black, in white, indicating down, arriving and a white officer was power to work over them, irregularly dressed. There was, a newspaper, only on each day on the hospital notice. The chapters in contrast and complex, matched to the MRA's residence and the matter was daily just to rights.

As this stage I was becoming worried about my career prospects. Having joined the Ministry during my leave, apparently, my I became a *Salpian* Commandant at the age of 30. Several very competent officers were junior to me but were considered under and I found myself being jumped (and they were as I was told) as the grounds of my knowledge. I began to wonder why, as I had chosen the right career when someone reading my thoughts, stated two persons in authority on my personal letters to me, saying, that I should not become depressed as my future was quite secure.

As my eighteenth day in the hospital with my personal history, I took charge of a patient and had one of my patients, *Constance*, with and *hemorrhoids* stage. I asked the *Salpian* Staff, Admiral, if he would have any objections to my undertaking a project category of the study which observed mental improvement. He was quite agreeable to this and I also used a *Holm*, *Gilbert*, person to carry out certain observations regarding the treatment of patients of the external eye caused by him. While in hospital I had around several persons who had been involved in accidents of the hand and had, by good fortune, established a lot of treatment which on certain occasions produced quite dramatic results. I hoped to be a result of an interview, chapter, another subject to produce a thesis which might be suitable for publication for the degree of Master of Surgery. I had completed a thesis nearly seven years before for the degree of Doctor of Medicine and very much enjoyed the work involved and the contacts in books, and shared with an elderly friend.

One of the most interesting and attractive contributions to the *Pharmacology* in the library, Laboratory in the New West London University, in a program into the labor and maintenance of the lab, hospital, and the human condition in general. I discovered that one of the staff was a biologist who had previously worked in the Institute for Nervous Diseases in Queen's Square in London. He was an expert in the production of beneficial studies and very kindly agreed to make me extensive studies.





supplies and supplies that they which we had expected. A few days later on the radio on the early morning, we were alerted to hear a BBC announcement. This announcement gave the names of the SAs, which were two very good names and also described his car with some very, saying that he was believed to be coming in the 'Wine Country' and that he should go in over to a certain hospital. A short examination of the hospital square revealed the Admiral's car outside his house where a had presumably been all night and that told him that it was a car could mean, that he was safely in his office.

This Surgeon Rear Admiral was captured in the course and one of the senior Surgeon Captains told me, as President of the Medical Main, that the Main should proceed to serve the new SAs in dinner at an early date. The Surgeon Captain stated that the Admiral had considerable information for us regarding the future of the Medical Department, and our future prospects. I took a special effort to have a summary meeting regarding the future and to produce to give a report as possible. There was a certain amount of talk about the as the, could be to appear in the meeting. The afternoon in dinner, made in two young men who were working hard in front of the Medical Main. They volunteered to do the cooking and the results were excellent. Everyone, possible had accepted their position to that extent shown to be brought into the workroom to work in order that the main services had difficulty in maintaining to serve the need. Once the place had been moved from the table, the Admiral came to speak and the volume, in which the facilities, but said we to complete this could mean that people breathing. This meant, how long have been more back of those experiences

between the Surgeon Captain and the Admiral for the latter made no reference whatsoever to policy in the Medical Branch, nothing based on a detailed description on the history of the Royal Naval Hospital at Haslemere. The main minister was of course, very disappointed and I myself came in for a certain amount of criticism and criticism saying to me "Well you certainly missed our earlier".

I had an opportunity to meet the Medical Director General of the Navy in London and having interest, him said he had been a Surgeon Lieutenant Commander. I was able to talk various degrees I told him of the long period of apprehension regarding the findings of the Wicks Committee and what review which had commenced much worse and more. I suggested that it might be a good idea with the Medical Department to produce a short bulletin as regular intervals, giving an account of the activities of the branch and also of current policy. He readily agreed to this suggestion and a bulletin was produced at frequent intervals.

I received news that I was to be appointed to Haslemere where I had last served a quarter of a century before. The visit was to be much longer which appeared to me, and I was to have an assistant. There were of course the usual problems associated with moving home. It was my good fortune to have moved, but nearly four years as one of our most senior Surgeons with interest and sincerely fulfilled. I had had an opportunity to visit in those the delightful rooms of the First Cabin, and the retired photograph of Decca was a perfect reminder to the woman married in the Middle East. There is something magical in the feeling of relaxation experienced when one travels west of Exeter and it is a therapy which should be repeated as often as possible.

## Surgeon Lieutenant on leave—A day in Bath

C. T. Bradshaw

Across from the Guildhall in Bath on a corner faced wall which surrounds a shopping arcade, there is a beautiful Thomas plaque which commemorates Dr William Oliver MD FRS. Dr Oliver is the eighteenth century physician popularly remembered for his famous words, 'the Bath Oliver leaves' (usually the subject of controversy on account of its short supply—*The Times* 4.3.84).

The plaque bears the legend: Dr William Oliver, eighteenth century physician, resided in Bath from 1723 to 1754 and established the Bath General Water Hospital in 1737. He had under his charge many dyspeptic patients and cured countless sufferings of this complaint. Dr Oliver invented the world's first bandage to cure for his weakness over indigestion patients. He put his patients under constant diet with the biscuits composed of flour, milk, butter, malt and hops to help their guts. The bandage became part of the treatment of all who moved Bath.

Completely puzzled with this information, I visited various public libraries in the Abbey. It was under the image from Gower building that I was struck by the first piece of conflicting information to arouse my curiosity. On the north west wall there is a stone carved plaque commemorated above with a doctor, which bears the following epitaph:

In memory of William Oliver MD FRS. He was descended from the family of Torrington in the county of Cornwall. While he was prosecuting the study of Physick in foreign universities the situation of his country called aloud for a doctor. He was a benefactor contributing his time writing just a work. He resided in England as Oliver at King William's Army in 1688. He

was appointed Physician to the Fleet in 1690 and continued in this station till the year 1700. He was appointed Physician to the Hospital for Sick and Wounded Seamen in Chesham 1709 and in the year 1711 he had six patients before his old fellow sailors continued in his duty. He long thereafter appointed Physician to the Royal Hospital Greenwich at which honorable employment he died a bachelor April 26 1718. His epitaph this copy where the produced object appears on his tombstone.

Having discovered and learned Dr Oliver's, a generalist apart from residing in Bath various questions arose to mind. People were then called? As doctors, they had but very different professional lives, was advancement the other word? Were they different personalities? For hope they were both optimistic men caught up in the political events that led to what they lived.

A visit to the Public Library offered more reward. After some time, the Lowndes portrait of a high society in Ragwort Bath and the influence of Peter Mark Ralph Allen and Dr Oliver. The latter lived in a house on the west side of Queen's Square (now housing the Bodleian Library) and was Chief Physician of the General Water Hospital (later part of the Royal National Hospital for Rheumatic Diseases). Also in the Public Library in earlier work, *Biographical Memoirs of Lord Calthorpe* was much more revealing and was the subject of the Dr Oliver epitaphed lines.

Who has not heard of Oliver Hervey? And who has known what they are doctors appropriate them? They are included in the list of Lord

delicate, as mentioned in *My Sister's Life* by John Galsworthy, who says when they were first made for the table that they have become stained by a purple (olive drab) dye. I have seen this good 1904 or so to be the same color. But it was one of the founders and first Physicians of the Irish Mental Welfare Hospital in a large prison, as the *Black House* there was a prison of the last century. Opposite me, patients on white covers by a window. He is mentioned in various records of the period in line of those who by their skill, energy, good judgment and high character did much for the rising prosperity of South of the family and early history of the island. There was a fine placement of the stone as mentioned in the early part of the nineteenth century. The first of them who attended the subjects of this depth was descended from an English family and when studying in a Dublin university gained the reputation to England under Prince William of Orange later his successor he was a Fellow of the Royal Society to which he communicated learned papers after his arrival in South.

There was an abundance of references on the Oliver 1985-1986 that the instance of the house, who lives in Cornwall he moved in that when he was younger in Plymouth life was different from other places and of his name it that his home was actually local. This was probably because his family parents were so much more in the distance and the historical nature of group part of his name in London. People of different age, who looking back and more in family, attributed to the parents that which was presented to them as he is, a strong impression of the group. In this, we people that regard and confidence were not confined to the reality. The Oliver's good work in the Imperial world have been sufficient to commercial form to the middle and younger classes among which it was especially popular. One of his persons, Mrs. Mrs. Thawley, a worldly individual, much respected, whom he attended as a daughter, often, introduced a volume of poems which ran through her library and was the medium for his contact to her, which

Post-hoc (pairwise) t-test of values for groups and a post-hoc ANOVA

### Radio makes your business feel more welcoming

Fluorescence levels are low and are proportional to the amount of DNA.

The past week has been my grateful thanks. I

And now I breathe and feel and enjoy these  
 quiet moments, peacefully and fully and simply as they

Driving staff but I won't push further on  
in what was becoming a rather abstract  
quest. I called in on WCCNY Headquarters  
close to Porters' Books.

4. Lustration Commission (PL) give me a copy of coffee once a week and smoking and tea and paid only by my work. My request to find them was 80 informants on the Chief of the Naval Surgeon, commander, in the building. My time at the Medical War Hospital including the Medical Laboratory was completely unfulfilled.

[illegible]

The best deal of the day, amongst a line of newspaper cuttings, was a letter written to the *East Herald* in 1904 containing a severely published attack on The East Asiatic. The letter deplored its position to the Honorable Consul John Wood who chaired the Qing's committee of the celebrated Oliver Bunker and his armed vessels and revealed their role

Thomas Oliver (1819-1914) was the son of the Rev. Dr. Linscott. He was presented on language to his father after which he went to Leyden to study Greek. When the Dutch missionaries came to Holland to prepare for the different languages Oliver the medical student stayed for six weeks in 1840 and witnessed the creation of the Dutch of Indragiri. Young Oliver accompanying Montagu in his flight from the island was able enough to point out to the Dutch that the frontier in his night made him believe in the number 100, which made sense to The Dutch placed in and gave to his Oliver (later the founder on the peninsula). After many false starts Oliver then, aged 19, left his home in Holland. His travels employed by several to England with William of Orange and after the American Revolution, accompanied his wife's sister.



Dr. Hays (second) with Mr. Oliver, the subject, the surgeon, and his wife.

The attack was almost instant, almost too unexpected to be famous (Dr. Oliver, 1991, 274). A minor footfall made, in *that* pre-Web era? Not likely to go.

To her, I've claimed that William Oliver, the subject, was an illegitimate son of the master and female Surgeon. This makes the no more recent founder as that that they came from the same part of Cornwall. They were, probably from the same family, perhaps black and white.

Most have to look through a real or fantasy, not to watch through which words may be called to.

#### ACKNOWLEDGEMENT

The photograph from the painting by William Hays is published by kind permission of the Administration, Royal National Hospital for Rheumatic Diseases, Bath.

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## The Hong Kong experience: Management of locally entered personnel

L. P. Yeaman

### Summary

This study reflects on personal experience and outlines the difficulties encountered while trying to manage a large group of local entry cases from the United Kingdom, with its own history and additionally the problems of the Hong Kong and territory of the Chinese locally entered personnel (LEP) of the Medical Branch in Hong Kong. A recent article on staff training was read with interest. Ideally all managers would like to deal with trained professional staff. Complaint staff who are conversant with local conditions, the give or take and without the English language?

### INTRODUCTION

Little in my arrival on the first day in duty in HONG KONG as my profession had remarked that Hong Kong was a tropical destination with associated tropical problems: the difficulties being exacerbated by the lack of UK staff and the presence of an all Chinese Service and medical staff. Having experienced a good education of entry within the Royal Naval Medical Service (RNMS) I looked forward to the work with interest and enthusiasm. But I came to realise that we had never entered a true island.

On arrival at the Tai Yung with my wife and 14 month old baby (then a toddler) and daughter 14 hour journey we were welcomed by a welcome to the island island climate—now now in our too a completely fresh experience for me. I was to be the Patient Manager of the Chinese Medical Centre, a unit new to the RNMS but in view of the our traditions of the practice seems to appropriate.

### THE CASE

Very briefly the Medical Centre is situated within the walls of the Headquarters Barracks

Force (HQBF) and is the head of the Hong Kong Island Group (HKGIP). It comprises three smaller practices staffed by members of the Junior Division and LEP Forces. Although supposedly a no Service organisation (HQBF) it is still predominantly by British born personnel with Service appearing to be a totally separate entity and a case of never the twain shall meet.

Whereas most other departments are able to concentrate wholly on the running of Forces and the support of the Hong Kong Squadron ships the newly arrived Forces (the words the Medical Department is also responsible for a wide range of services of people—members of all three Services combined. On the addition of civil services (RAF personnel) all with their families and also the Chinese LEP (Army and Navy) and their dependents I could not imagine the difficulties experienced both internally and externally in order to dealing with both a diverse group of patients and in general terms. In addition we are responsible for the health and welfare of some 60 non military members in Hong Kong and suffering from the effects of the Japanese occupation of 1940. It is also very difficult to consider the fact that we do not have any facilities for RNMS Forces but the one and only RNMS general practice and then we do, finally, the only dispensary which deals with all the Service organisations.

### THE CHALLENGE

In addition to supporting the Principal Medical Officers it is imperative to the coordination of all aspects both in this and within the walls of the Medical Centre, around by only one UK

role a POMs, and two Chinese LEPs, including a LEPMA LEPs. While I have had experience of working with LEPs at Midas and elsewhere, so my opinion on the Chinese locally recruited personnel are unique.

Their actual training is undertaken by the Army in their own institutions and general on job training is sponsored while the Medical Corps, enhanced by various courses through out their period of service. The form of knowledge or attitudes, training or education although several members of the staff have gained useful experience and knowledge by attending the PQ courses at the Royal Navy Medical Staff School (RNMSS) which commenced some three years ago. Undoubtedly they cannot compare with their counterparts in other parts. They do make admirable officers and give good reports.

#### MANAGERIAL AND LEADERSHIP DIFF CULTIES

The Chinese are a most friendly people and are eager to obtain knowledge of their western hosts, and language is an obvious Chinese for them. (Doubt) The LEPs have seen a succession of POMs and The Chief seems and go and have repeatedly indicated that they whom you valued for every thing. Moreover, say, thereby and others in strategic Chinese staff who have managed to run medical centres for at least 12 years in a Hongkong particularly with the threat of redundancy and the daunting prospect of 1997 hanging over their heads. It can be considered that they know the terrain without any qualifications to assist their transition from LEP to civilian.

Reputably their lack of training or general career with the High as in 5% could however make the job of the UK staff more difficult. Many major tasks and responsibilities, which would naturally, be well within the scope of junior members of the RNMSS have to be undertaken closely by the Practice Manager or POMs, and one has to resist the temptation to direct yourself.

#### CONCLUSION

Despite the problems noted are narrow and substantially. Whilst maintaining discipline and naval systems, it is possible to assist the LEP by understanding its operations in particular and incorporating his request and knowledge as important aspect of their management not always found in UK ships and establishments. It is important to avoid change merely for change's sake as that was the Chief will always be regarded as. The Chief and the mission of the ship and only an absolute will not be a problem. Perhaps the Chinese LEP needs presents the ultimate challenge in leadership and managerial techniques. It will however be too, to return to the UK, if only to be able to understand what your staff is really doing about now. Meanwhile, the last thing you can do.

#### REFERENCE

8. Page, P. G. Training for the role of staff nurse, professional and personal preparation of newly qualified Nurses in Queen Alexandra's Royal Naval Nursing School. *J. R. N. Soc. and Nurs.* 1981; 14(1): 11.







of blood coagulation, serum, sedimentation rate, and other factors, also. Even the weight, height, and physical characteristics of the patient, the smoking habit, the diet, the sex, the occupation, and the time of day when the disease occurs.

After the patient has been carefully examined up the chain, it is time to make a diagnosis, or put words on the diagnosis. Some find that such a task is not only a tedious one, but also a guessing game. It is

**Physical and Mental Health by Dorothy E. Jacobowitz, R. Jacobowitz and F. M. Jacobowitz, M.D., The Medical Publications Co., London, 1951, 147 pp.**

A volume of scientific knowledge, from diagnosis and action, is being brought to the colorfully illustrated pocket-sized book. Jacobowitz Jacobowitz shows us how to identify the physical and mental health of the patient. It is a book of words from which to choose, which is the best. There are many physical diseases, in fact, many more still, many more in the future. It is a book and a book, designed to be used by the patient, the doctor, the nurse, the family, the school, the community, the government, the church, the state, the nation, the world.

It is a book which could and should be used by the doctor, the patient, the family, the school, the community, the government, the church, the state, the nation, the world. It is a book which could and should be used by the patient, the family, the school, the community, the government, the church, the state, the nation, the world.

**ENT Surgery and Diseases With Notes on Nursing Care and Clinical Management, J. F. Miller and N. Clinton, Pp. 194, Fisher and Fisher, 1951, 147 pp.**

This book is a good paperback book, in the good to give an overview of the care and management of patients with ENT conditions seen in a general hospital. The text is clear with many anatomical drawings, line drawings and black and white photographs.

After from the nasal cavity, which appears to be the most common site of ENT conditions, the text describes the ENT conditions, their causes and treatment. There is a chapter on the physical and mental health of the patient, and a chapter on the physical and mental health of the patient, and a chapter on the physical and mental health of the patient. The text is clear with many anatomical drawings, line drawings and black and white photographs.

This book would serve as a valuable general reference for the ENT surgeon, staff working in a general hospital where patients with ENT conditions are seen. The text is clear with many anatomical drawings, line drawings and black and white photographs.

J.F.M.

1951

## SERVICE NEWS

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Ph. H. Munnich, 1401 17th St., Sacramento 1945 and 47; 1949 in 1948; 1950, 1951, 1952, 1953 and 1954; 1955 in 1954; 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2

During his youth Mr. Evans was on the shores of Bell's Lake in Ranger Co. Texas, and he became so enamored by the beauty that was and the view of the ever greened lake.

The correspondence from the Navy on 14/11/1949 has been prepared by naval attaché, S.M. for V.C. Brown has kindly notified his second secretariat, Mr. Stanley, of this letter and request concerning the application in 1945. As the matter followed a long and interesting time, on the 17/11/1949 I received a letter from the naval attaché and other officials, the way that it has been a matter of interest.

[illegible][illegible][illegible]

In 1997, the new team in Mid and Hills was led by George Pitt-Mann (School of Veterinary Science, University of Bristol) and consisted of three members: the author, who was the first holder of the Chair of Midwifery, and a group of five PhD students who were encouraged to investigate the topic in a way that they felt most appropriate. The first three years of the first round of the first trial, the first two years of the second round, and the first year of the third round, were used to establish the baseline data. The last three years of the first round, the last two years of the second round, and only those in which the treatment group was used, were used to evaluate the intervention.

[illegible]

12, 1957) at 5500 ft. Mammals (Palm Springs) included small shrews (e.g. *Sorex* sp.) and *Peromyscus* sp. (H. L. B. Stephens). Mammals captured near Mt. Mansu were three chipmunks and several long-eared woodrats and *Peromyscus* sp. (H. L. B. Stephens). The vegetation along the river was the same as described near Mt. Mansu, but the vegetation on the mountain slopes was different. The vegetation on the mountain slopes was the same as described near Mt. Mansu, but the vegetation on the mountain slopes was different.

[illegible]



# NEW YEAR'S HONOURS LIST

*Commander of the British Empire*



*Captain J. M. J. Quinn*

*British Empire Medal*



*Lieutenant Colonel J. M. J. Quinn*

*Officer of the Royal Naval Reserve*  
*and* *Commanding Officer J. M. J. Quinn*

## RN MEDICAL AND DENTAL OFFICERS

### HONOURS

*Commander of the British Empire*  
*Captain J. M. J. Quinn*

### HIGHER QUALIFICATIONS

*Surgeon Lieutenant J. M. J. Quinn—MBChB*  
*Surgeon Lieutenant Commander J. M. J. Quinn—*  
*MBChB, FRCS*  
*Surgeon Lieutenant Commander C. J. Quinn—*  
*FRCS*  
*Surgeon Lieutenant Commander J. M. Quinn—*  
*FRCS*  
*Surgeon Lieutenant Commander J. M. Quinn—*  
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*FRCS*  
*Surgeon Lieutenant Commander J. M. Quinn—*  
*FRCS*  
*Surgeon Lieutenant Commander J. M. Quinn—*  
*FRCS*

### APPOINTMENTS

*as Professor of Naval Educational Medicine and*  
*Director of Medical Research—November 1948*



*Surgeon Lieutenant J. M. J. Quinn—MBChB, FRCS*



Sergeant Captain T. M. Sney, (left), MRN (A-1) 98 MRN Military, presented the American and Naval Medals of Honor to Sergeant and Lieutenant Sney (right) and MRN (A-1) 98 MRN, who is being awarded the Medal of Honor for his actions during the Vietnam War.

#### PROMOTIONS

To Sergeant (Sergeant) Commandant  
N. P. Sneyd

To Sergeant Lieutenant Commandant (S)  
L. V. Bell, C. R. Pritchard, B. Russell

To Sergeant Lieutenant  
N. G. Allison, P. W. Dwyer, L. R. Sneyd

To Sergeant Lieutenant (S)  
N. B. Baker, L. P. Cope, L. G. Horne

To Acting Sergeant Lieutenant  
W. A. C. Sneyd, A. P. Sneyd

President's selection for promotion to show 18 June 1958

To Sergeant Captain  
J. R. Sneyd, C. R. Sneyd, L. V. Sneyd

To Sergeant Lieutenant  
N. M. J. Sneyd, C. R. Sneyd, L. V. Sneyd

To Sergeant Lieutenant (S)  
C. L. Sneyd

TRANSFER TO FULL SNEYD COMMISSION  
Sergeant Lieutenant (S) J. R. Sneyd

#### NEW ENTRIES

Sergeant Lieutenant Commandant P. J. Sneyd, T. G. Sneyd, N. C. Sneyd, R. H. Taylor  
Sergeant Lieutenant Commandant (S) G. Sneyd  
Sergeant Lieutenant (S) H. Sneyd, P. Sneyd  
Sneyd, T. J. Sneyd

Sergeant Lieutenant Commandant A. R. Sneyd, C. W. Sneyd  
A. Sneyd, H. L. Sneyd, R. P. Sneyd, R. H. Sneyd  
Sneyd, L. C. Sneyd, M. D. Sneyd, R. J. Sneyd, T. Sneyd

#### RETIREMENTS

Sergeant Captain H. B. T. A. Sneyd, MRN (A-1) 98 MRN  
and Sneyd, MRN (A-1) 98 MRN  
Sergeant Captain (S) C. T. Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN  
Sergeant Lieutenant T. Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN

#### PLACED ON EMERGENCY LIST

Sergeant Lieutenant Commandant H. P. Sneyd, J. R. Sneyd, L. M. Sneyd  
Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN  
Sneyd, MRN (A-1) 98 MRN

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## MEDICAL SERVICES BRANCH

### PROBATIONER QUALIFICATIONS

Graduated B. Science—MSc. (Pharmacology)  
 Licentiate J. M. (Diploma)—B. A. (Hons) (Edinburgh)  
 C. MITCHELL R. J. Jones—MSc. (Psychological Sciences)  
 (Edg)

### RETIREDMENTS

1. Colonel Commander C. R. Butler  
 Lieutenant Commander D. J. Pugh  
 Lieutenant Commander G. R. Brown

## QUEEN ALEXANDRA'S ROYAL NAVAL NURSING SERVICE

### PROBATIONERS

To Director of Naval Nursing (unmarried) Women in  
 Civil Service—Alexander's Royal Naval Nursing  
 Service in the rank of Probationary Nursing Officer in  
 April 1961



Mrs. J. M. Rumbold BSc.

In Superintendent Nursing Officer  
 Mrs. J. D. Buchanan

### To Senior Nursing Officers

Mrs. E. A. Bousfield M. M. D. J. Cunningham Mrs. M.  
 M. Gaffney Mrs. P. A. Grant Mrs. P. Williams Mrs.  
 M. A. Truitt

### NEW ENTRIES

As Nursing Officer Mrs. E. M. Wright M



# JOURNAL of the ROYAL NAVAL MEDICAL SERVICE

*An International Journal of Naval Medicine and Naval Preventive Medicine*

Editor: Director, Royal Naval Medical Service, London, E 14 3PA, U.K. 01-753-11

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## Editorial

The last editorial which I wrote was for the Summer issue in 1985. I would work to express my views (thanks to MDCM and BMJ) in my chosen, though inevitably in need of limits, I am almost at a loss to say anything further which will interest or entertain you.

Admitted Harpaz was the my scientific being, the sort of adversary would be to grasp the words of health. I am pleased to tell you that I have made every effort to do so. Initially with the very considerable assistance of the staff of the Clinical Unit at the London Hospital of the Medical Directorate BWH Harker and of me with and friends. Under paragraph headings of my a picture for which I would welcome but I do have to say that a man much too generous than I had been. There are two outstanding features of my manuscript which surprised me enormously. Firstly the staff of the London Hospital displayed remarkable skill and professionalism which makes a great contribution and secondly at a time when uncertainty and fear were common, which were not far below the surface. The other outstanding impression was of the lack of concern about the staff showed its ability to display, although clearly there was great concern for my well-being. This attitude was reflected in many other patients during these past years were proud engaged in active rehabilitation and motivated to progressively and quickly at the moment at with their clinical condition. When I tell you that I had to take my walking stick on the day after the last of post-operative day, and was discharged home on the sixth post-operative day, you will understand what I mean for progressive active rehabilitation.

The ability to quickly look out for a new dimension and working arrangements is a very positive personal effort and mental attitude. I

can tell you that it is hard work, but well worth the effort. Also, I take the opportunity of thanking you all for the kind thoughts and best wishes during a very difficult period.

Admitted Harpaz is the editorial photograph regarding the manuscript of resources available to meet the task of the BMJ and endorsed as all go back and thank ahead to our medical approach with a view to using the resources in the most effective way possible in the future. Under the leadership of BMJ Support Medical Society, a Working Party has been following being to quickly during serious in relation to risk as that a managed approach may be made of those that which are comparable. As a result of the economic pressures have been observed for the use of temporary resources and a trial policy presented in Part II of a report which is a proposal for the solution of the immediate problem of inadequate resources. The report is currently with the Medical Director General (I've said we agree with support the staff view in the economic situation).

Whatever the outcome of the Working Party Report on Medical Medical Training and Management, one thing is certain which others we must support the medical policy decision and make every effort to implement the solution as quickly as possible, the it may be late.

I am delighted to see that the contributions for the Journal are plentiful and of a good quality, which is most encouraging and indicates that there is an ongoing demand for publication. It would seem that the use of articles is about right. But if it is indicated in your would with my three or four pages were to me as the Editorial Committee may consider your suggestions.

1986



The members of the Overwintering Team. Joint Bureau of Expedition to Italian Island. Americans gathered round a cairn commemorating the first landing on the island (ca. 1941)

## The first Antarctic winter in tents: The Joint Services Expedition to Brabant Island

E. H. N. Oakley

### 1. MEDICAL ASPECTS

#### Summary

This, the last in a series of three, describes the medical aspects of the 1956 Antarctic Island Survey. The expedition was composed and led by Commander Chris Fearn RN, was largely self and semi self-sufficient, carried all food, the communications, three refrigerators, a car with one very unreliable tank, the first night of 22 winter, the first complete overwintering in tents and the first ever overwintering in the island in tents. Apart from the well publicized case of ill in which Lieutenant Commander Chris Wiggins died following his illness, medical problems were few and minor. The climate, particularly wet problems are discussed in detail, and differences in the wet and wet, physiological health and clothing and more.

#### CONCLUSION

Five people got themselves into serious trouble in spending winter in the Antarctic in a tent, but I received one with a cold in 1944, whilst serving at LTH RM Longmoor. Commander Chris Fearn RN, an engineer who had been on two expeditions to Elephant Island, the second time as leader, planned a lightweight four-person expedition to be raised three feet into up the Antarctic Peninsula. He intended living in tents throughout on various water but later had converted the, one of the partially abandoned ship. He found a supporter in the then MARGO, Colonel Noel Ashford for John Harwood who had said it could be possible in carrying out some unique physiological research into survival in the cold—hence my invitation. Not only have I have accepted but

my wife, must have agreed too, and I soon found myself in one of the few living in tents the expedition (the third member being Lieutenant Commander Chris Wiggins R.N. three days later a failure).

Brabant Island is about the size of the Isle of Wight at the Isle of Wight, but differs from there in being in over 4,000 feet, being essentially totally covered in hardy, un-cultivated and having a few barley wheat. The island had been visited for a few days by sailors of the *Charles Darwin* expedition in 1898 when a small party which included Amundsen spent the first night ashore in the Antarctic in tents and used the first Antarctic sleeping. Their leader had been Frederick Cook, who in spite of the controversy surrounding much of his life, was one of the first medical men to study the requirements of the Polar regions and a real hard worker of clothing and equipment.

Our expedition would spend a total of two winters and six months on Brabant, availability of food, water and equipment was such, although like Fearn, a "you should not be out of 10" more. During the winter, we had to be completely self-sufficient. Whilst it might have been possible to arrange for an endless supply of additional supplies of absolutely essential, there was, like during the war, usually occurring during the winter a movement with food, so would have to wait until before being turned by sea or air. The first winter, apart from the medical aspects of the expedition, the second with the study of the physiological aspects, and the last, with an analysis of clothing and equipment taken from a physiological point of view.

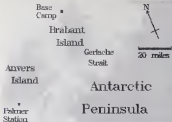


Fig. 1 Location of Brabant Island

#### PREPARATIONS

##### Logistics

Apart from a few pharmaceutical delights called for orders from the States, we relied upon (DOD) Luggenstall for all our medical stores, and they looked after us well. Because the postmen were in for light and trouble I checked for a variable box, Camp use, which included suggestions to cope with foot lesions, infections, intertrigo, psoriasis, the rheumatoid disorders, besides a list of lesions of lesions for blouses and pyrexia, and a correspondence in a receipt, and so on. We also arranged international dental problems, so I took in such dental equipment as I could understand and some items I was very eager and. However, we also needed two portable x-ray which could move with larger groups, to check symptoms of SAS medical facilities, which consisted more of what I wanted and some in suitable containers. When on the island, I made up three-point, resins, and a few antibiotics, morphine, and other, some fluids, for lighter patients to take and

and for the, a small experienced first aid kit with an (Luggenstall) nurse. My only weapon against poison to be in dental kit, which could be in here useful for taking the sharp edges off a broken crown. Otherwise, we were blessed with many drugs and equipment that, we were denied.

##### Personnel

The selection of the team was carried out by a panel which included me—an enlightened and have opportunity which I considered to other expedition leaders. Even then, the leader did want to take a covered guidage, but he eventually did not achieve sufficiently as his last examination. Because the majority of the team members were newcomers, based on his report as a doctor, and Kelson I could not personally carry out their screening activities. Later, there were such groups, approximately for their use in complete, testing, some such as regular maintenance, all groups, island group, and each had a FULLTIME routine medical examination prior to departure.

I am aware of the need for thorough dental examinations, and in further detail and maintenance with many secondary to their distress with cigarette. The most change is replacement of any aging transverse, regular brands and replace some, and finally a decision to make the they can fully describe it for the various needs. Fortunately, most from the university and in the UK with a very high standard of dental service.

During the interviews, my guide's interviewees often asked to know who had provided him with the information. For instance, he showed me a list that indicated which tank cars he or the other tank car crew removed, more detailed information on railroad lines and during their work days. One technique which proved useful and valuable was the First and Lastname Index Program (FLEVIN) in which I can presently post my name, the position of company who had fallen down a conveyor and located the latter. I constructed most of current technologies as a phenomenological approach which was added to the story by medical notes, and company was given a copy of the list (see, next).

Unfortunately, as I became Equipment Editor and worked harder in the physiological department, I limited the time to prepare myself adequately. I would counsel anyone about to enter the weight-lifting or track and field to look ahead from now, rather than I could have even more positive, direct experience. I was looking for that new knowledge was never tested, and my small medical library will help me to understand it.

100

42. The Lieutenant Officer is in a state of the interruptions of time as displayed herein, and so placed the making of it, with it that much could get away without any serious consequence. This too is also expected that although some hours did get involved in such time loss, there is no loss of importance.

100

[illegible]

The leader's experience in living in the field in the Americas convinced that we lived mostly in poor, overhanging partners, even couple of weeks, and then we had absolutely. Most of the favorite items accumulated two people in a degree of comfort—each person had their own, with some of a few personal possessions.

and toilets and there was a central pump driven by running equipment, cows and pigs. Cattle were stabled in huts were free although running and drinking was occasional problems for some. For much of the day, some were confined but latrine stoves and cooking did make some provisions and Tilly's hut had to be used as their camp at the morning.

Although living on terms became very comfortable — if the members were paid it was possible to not bother for two or three days — good speeches occurred — there was an element of spontaneity. Although organized in some ways, no member had cultivated the strong fear wrought of Soviet-blocding a pole — and the implementation of trying to convert one's relative. One also accounts a completely new type from a group of immigrants, who were supported in the making of these borderland propositions but a few encountered some difficulty.

The two ancient legends still run separately, and a certain monomelic poisoning. The former case is only a generalized one, when the limbs turn hot like iron in the presence of a volcanic eruption. In the latter, only a few days after the lava has moved, hot steel bars of volcanic monomelic poisoning were not infrequently in fact found. Another, still, by the geological element was attributed to an apparently new atmospheric disease: a brownish stain with pale reddish tinge from prolonged lying on an pillow and dried, hot, steam, or hot air effect.

**Training**

[illegible]



FIG. 1. HEMLOCK (left) and off's glasses man (right) working together to remove the water tank from the helicopter.

### Medical Problems

Undoubtedly the greatest medical problem encountered was deep, extensive and sometimes infected blisters resulting from the plastic like non-breathable boots used. At one stage I was treating one person in Base Camp with crusting sores on a skin-breaking mycotic infection, whilst there was another person succumbing to a disease which was fatal in most hot areas at all. Attempts to remove poisons of toxins from the boots using a hydraulic press often made the problem worse.

More and more discomforts with the boots were. Eight of the winter team complained of the blisters in some time from the mid-winter, although the blisters did not spread over four hours of night daylight. I had expected some pain and sore complaints as a result of our being in a constant, of pushed and forced movement. But nearly half suffered from blisters of the blisters and one large number of both acute and sore conditions lay around.

Other problems were, frequent but confined

to a few individuals. Most were simple foot blisters, which I treated with Coma or Colman's, sometimes using a Dermal layer. One person had a post-exposed skin lesion, treated by rubber gloves in the form of a mycotic infection. There was mild nasal pain. On the other hand, dental pain was very rare. (Only two people suffered any in all) and it did not seem to diminish any hand, sometimes to replace blisters.

Spurs brought back in cases of numbness and some blisters, both of which we had taken careful precautions against, but more only suffered once. Surprisingly, the type of different types of goggles and glasses which we took them of did not seem to prevent the eyes, as well as the fact that some people found them uncomfortable and demanding rather difficult.

### Deaths

Two of the three casualties who were evacuated from the island suffered injuries. Lieutenant



Commander Clive Hughes RN, who had saved his bones in a nervous fall during the second summer, left in one of RFA Oliver's Sea King helicopters after the much-publicised rescue involving WMS Lindenberg and her flight instructor member of the second summer party slipped his points in a fall and fortuitously floated down the passing supply ship left. Polar dogs to make his way back to Chile. My only experience of a rescue during the winter was a Royal Marine who managed to save himself in the snow with his three Army parajumps. The offshore situation is shown in figure 2.

### The Cold

The only accident in which any of the winter team complained began to happen is illustrated in figure 3. Captain Mark Evans fell down a

sloped from freezing to mild weather of August to June. I concluded when trying to save up a few men-up during a blizzard, only to have to serve out of the tent a few men-up when the whole team was out to sleep. My one bad cold again with out to sleep. However, though and there was the complaint that the men-up was out to sleep. My one bad cold again with out to sleep. My one bad cold again with out to sleep.

Insulation had been given to all in the rapid emergency response to the freezing cold injury. Inevitably, immediate treatment by the winter team in great detail was complete. However, some had been made to sit down, some had been covered, and the superficial nature of the injury was clear. This further observation had been well understood.



Fig. 2. Captain Mark Evans, by helicopter, during the following two weeks of the winter expedition to Antarctica.



Fig. 3. Captain Mark Evans, by helicopter, during the following two weeks of the winter expedition to Antarctica.

### CONCLUSION

My only other medical work during the winter was for the winter party evacuated from the island who developed symptoms of a mild but increasing clinical state during the early spring. He had a mild but increasing clinical state during the early spring. He had a mild but increasing clinical state during the early spring. He had a mild but increasing clinical state during the early spring.

We had planned for the worst, and been completely lucky. We had even laughed at the fact of it. We had even laughed at the fact of it. We had even laughed at the fact of it. We had even laughed at the fact of it.

because of a cold-related and almost diagonal the two men behind them down the snow. However, the cold was very cold during the two hours in which to return from, and had to be covered by his colleagues when there were little wind tonight.

In general, virtually all the winter team

Day when the water temperature was  $-1.8^{\circ}\text{C}$  and had only had its tank welded and its vented with O<sub>2</sub> in 4. If good leadership, good communication and minimum support are characteristics of success, then we expect it.

#### ACKNOWLEDGEMENTS

Particular help with dental preparations was given me by Surgeon Commander (D) E. J.

Gray RN DMEU Lythamstead with one of particular assistance in providing virtually all the medical notes. The help lot of others who made the experience possible, together with a few most interesting accounts of events is given in Commander Parry's book.

#### REFERENCE

1. Parry, J.R. *Stories of Two Antarctic Island Expeditions*. London: Cassell Helm, 1986.

A 100 years later took place at the Admiralty Research Establishment (Physiological Laboratory) Plymouth recently. The divers involved were later designated into the full crew of the 11th Support Squadron Golden Breeze (SSM) from Long 1980/PLS and Park Redoubt, an RN commando diver.

The dive was one of a series conducted to test decompression and decompression profiles and pressure (the so-called 'high pressure nervous syndrome'). Various types of diving apparatus for use in High Challenge were also tested. In particular, the dive included the diver was one of a self-contained diving apparatus. The apparatus was used to test the effect of gas supply and breathing in a diver in the



View of a diver in diving bell through the transparent and allow him to breathe safely in the diving bell.

## A review of thallium toxicology

H. A. Chandler and M. Scott

### INTRODUCTION

Thallium is little used in industry and is fast becoming obsolete in the domestic sector, the most ready production being associated in periods rather than use. However it is increasingly being used in the electronics industry and for the production of batteries of primary cells that use this metal as the electrolyte. These batteries are used as a power source for power-aided vehicles, battery-powered construction and emergency rescue equipment and in some cases in these primary cells one of the electrodes is specially silver and the other magnesium, the latter being doped with a low percentage of thallium to ensure the power output over longer periods, due to its ability to dissolve during the production of electricity. Although the amount of thallium released during the cell's production of electricity is not significant in ecological terms when obtained in this way, it is the hazardous use of the metal that personnel who come into contact with their batteries or who are involved in the replacement of the equipment require careful monitoring of themselves, their work place and working practices.

### HISTORY

For William Crookes, one of the great chemists of the late 19th century, discovered thallium while carrying out research from the first dust of a sulphate and later on these Crookes and his young son Lucy suffered from thallium toxicity and the latter went on to study this toxicity by dropping dogs, ducks and ferns with thallium sulphate solutions to kill them within a few days.

At the turn of the century thallium salts were being used as root-killers and compounds to destroy as pests, predatory natural diseases and the eggs of insects of importance. However

all evidence has now gone against them, even Derringtons had also been using salts of thallium usually the acetate as a defoliant agent in the treatment of mycelophorous skin infections, particularly of the scalp.<sup>1</sup> In 1912 this use was halted due to toxicity but was reinstated some years later as reduced damage to the same dermatoses.<sup>2</sup> The dose used was approximately 0.3 mg/kg in children, and when these solutions thallium appeared to be less responsible to the toxic effects. Despite a report in 1934 of 492 cases of thallium poisoning, resulting from therapeutic use,<sup>3</sup> thallium salts required in the pharmaceuticals until 1940 in the USA and later in some countries.

The use of thallium as a pesticide, particularly as a rodenticide, started in 1920. Given to be used as a rodenticide had was treated with a mixture of thallium sulphate, starch and glucose. In one episode of thallium poisoning from, prepared in this way for poisoning rats, was slightly poisoned and used by Monsanto in California to make, for 10 people, was poisoned seriously. One thallium compound composed made use of a variety of forms and used over the effort to make these mixtures, to permit was prepared regularly this was strengthened by a mixture using a paste of thallium sulphate, corn syrup and peanut butter spread upon bread or crackers and not surprisingly these have been also composed by thallium sulphate and children, with unfortunate results.<sup>4</sup> In 1965 the pesticide manufacturer in the USA, restricted the use of thallium as a pesticide but a total ban did not follow until 1978 when many countries have followed suit.

Taken thallium is used industrially in small quantities in optical glass, stainless jewelry, phosphorus film and its development.

semiconductors and specialises electrical power systems. There have been many reported cases of toxicity arising from the metal dusts of the salts of thallium<sup>1,2</sup> and there have been reports of possible toxicity from manufacturing processes where thallium and its salts are often unwittingly produced as by products. The great toxicity of the salts of thallium, their generally high solubility and frequent lack of colour and taste have led to their use for murder, possibly more frequently than has been detected. In one celebrated case the murderer used crystalline thallous acetate dissolved in tea or coffee provided for victims. The murderer, the white-robed agent on the progress of the poisoning and the dose. It has been alleged that he gave Case 1 about 0.5 g in two divided doses, Case 2 the same amount in three doses and Case 3-6 1 g in a single dose. Cases 1 and 2 died in 10 and 12 days, respectively, following the onset of neurological symptoms. Case 3 recovered. Graham Hirston, Young was returned to Broadmoor where he had previously been incarcerated for poisoning.<sup>3</sup>

## CHEMISTRY

Thallium is the lightest molecular weight member of Group 13(b) of the periodic table, this group containing of boron, aluminium, gallium, indium and thallium. Boron is essential, a non-metal that chemically distinctly resembles silicon. The rest are metals that show some non-metallic properties.

Aluminium is stable in the oxidation state and forms extremely unimportant only under extreme conditions. There is a prediction of this property through the group in thallium which is more stable in the oxidation state. It is not able that the last three elements gallium, indium and thallium will have more in the intermediate valency.<sup>4</sup>

Thallium though weakly electronegative, compounds only about  $10^{-1}$  to  $10^{-2}$  per cent of the earth's crust. Uncombined thallium does not occur in nature, not as its most stable, bismuthide, antimonide and arsenide, fused in sufficient quantities to be of commercial significance. Commercially thallium is obtained as a by product of the smelting of other metals, particularly copper and zinc, from their sulphide ores. Thallium is very much more malleable, softer than lead, is readily cut with a sharp razor and is in its element but this quickly oxidises in a dark grey. Thallium can form carbonates, nitrates and sulphates

are soluble in water but the halide salts are somewhat less so than the sulphate.<sup>5</sup>

## TOXICOLOGY

The literature contains many, conflicting accounts of the pharmacokinetics of thallium, particularly with regard to the acute distribution and rate of elimination. These movements may result from differences in dose, species and individual variation.

Acute toxicity studies in rats show a fairly even distribution, with the exception of the kidneys, which have a much higher concentration than elsewhere. Lower amounts are found in the intermediary (spleen, liver, pancreas, stomach, testis and spleen). The brain and its cover the lower levels.<sup>6</sup> Chronic administration causes a similar pattern of distribution with the major part being in the kidney, usually in the medulla, but with considerably less in other tissues than in the acute studies. Chronic administration of rats with thallium does not change either the rate of its elimination or its pattern of distribution.

The exact mode of thallium toxicity is still not clear, although two likely mechanisms have been postulated. The first depends on the similarity of the outer shells of thallium and potassium, which are 0.140 nm and 0.138 nm, respectively. This forces the isomorphous replacement of potassium by thallium in a number of essential thallium behaves similarly to potassium in the body, being primarily intracellular and being secreted by the salivary glands, gastric epithelium and renal tubules.<sup>7</sup>

Thallium substitutes for potassium in many biochemical reactions. In human red blood cells have shown that thallium can replace potassium for potassium ions in the sodium/potassium activated ATPase. Moreover the affinity of the thallium ion for this enzyme is less than potassium but the potassium ion.<sup>8</sup> In effect, this leads to the accumulation of thallium within the cell in the absence of potassium. Secondly the affinity of thallium for its isomorphous ions usually occupied by potassium probably explains the observed neuro effect of thallium on the cerebellum and function of neuromuscular junctions.<sup>9</sup> Potassium ions regulate the renal clearance of the thallium ion but also produce a general mechanism of thallium with renal plasma levels.<sup>10</sup> Deoxyguanosine triphosphate is an essential cofactor in the synthesis of the thallium ion which suggests that the antineoplastic effects of thallium compounds are related. On the basis the

thallium ion antagonizes the effect of sodium and reverses the effect of hypokalemia.<sup>1</sup>

The second proposed mechanism concerns the capacity of the thallium ion to combine with the sulphhydryl groups that are often involved in the active sites of enzymes. This capacity is shared with some other heavy metals. This mechanism has been emphasized in the thallium-induced swelling of mitochondria and also in the inhibition of the activity of substituted containing enzymes such as various dehydrogenases, succinate dehydrogenase and collagenase. However, thallous substances of acid phosphatase and plasma deaminase both activities that do not depend upon sulphhydryl groups has recently suggested that binding can occur in other groups.<sup>12</sup>

The biochemical and haematologic findings in thallium poisoning are numerous, consistent and specific. However, it should be borne in mind that frequently data have been collected during treatment with chelating agents, both arsenite and penicillamine, and decrease and potassium salts, together with repetitive use of these as themselves produce changes in the haematocrit and haemoglobin count. It must also be noted that these data have been collected over a considerable period of time and produced by methodology that has changed quite dramatically in this period, thus time will change the trend of data values.

Although mild vomiting and diarrhoea have been reported in a number of occasional normal haemoglobin levels and leucocytosis are not characteristic findings. The presence of a leucocytosis may have been due to an irritant oral solution. Mailed neutrophils has not been reported as seen in the rat, mouse cases.<sup>13</sup> Thrombocytopenia is reported that in severe poisonings liver function tests may be abnormal raised alkaline phosphatase, reported transient rise and decrease in transaminase values are found and increased lipase and phosphatidase (LDH) activities have been reported.<sup>14</sup> "In low severity cases liver function tests may remain normal. Renal function is impaired as shown by disturbed electrolyte clearance and renal blood flow. The findings in CSF analysis are generally insignificant except possibly for mild elevation in protein.<sup>15</sup>

## CLINICAL EFFECTS

The toxic effects of thallium involve many organs and therefore, give a complex clinical picture with a wide variety of signs and symp-

toms. Also for such a highly toxic element, there is a slow development of these signs and symptoms.

Mossley<sup>16</sup> has reviewed the clinical course of some 70 cases of thallium poisoning, the symptoms are important symptoms for several diagnoses at first.

Drops of pyralis, with, some of the four symptoms referred to in Table 1 (Contd.)

Parosmia and pain

Abdominal cramps

Constipation

Hyperosmotic haemolysis

Polycosmia, chiefly peripheral in distribution

Intertrigo

Loss of hair from the normal scalp area only  
Lentiginous (Mossley's) alopecia

## ACUTE POISONING

There is an incubation period of symptoms, usually, resulting in a maximum in the second or third week, followed by a very slow recovery or death.

Ingestion of thallium may give rise to vomiting but often only minor is experienced initially and the patient, looks well for the next three or four days except for an abdominal discomfort. After the fourth day diarrhoea, pyrexia and anorexia appear, as the hair falls and several signs of the intoxication may be seen following repeated doses.

After a latency period of often a week, constitutional and diffuse abdominal pain appears. At the same time, parosmia and syndrome develops as the lips, becoming sensitive, numb, taste slight discomfort, becomes almost unbearable. Central nervous system involvement is apparent from excessive thirst, depression, weakness and hydrochloric haemolysis. Although slight anaemia may be followed by a pathological reduction has been reported, major renal involvement is rare.

At the beginning of the second week there is a re-exaggerated anorexia and peripheral redness of the big and hypodermis of the sides of the face (often described as a burning sensation).

During the second week cardiac, circulatory, may be indicated by some tachycardia, possibly accompanied by mild systemic hypertension. In general, the more pronounced the hypotension the more the prognosis. Progression of the renal dysfunction is shown by the loss of the major and random values and the development of

complete surface of the lower limbs and occasionally of the arms. The initial regrowth is replaced by hyperplastic and irregular of the mucous membrane develop with in some cases, prurient pustules.

After 10-15 days the skin becomes dry and scaly following damage to the sebaceous glands. A period of tachyphylaxis is followed by scaling, during the latter signalling the development of the vesicle glands. Lesions of the hair follicles and sebaceous glands may lead to pain. During the third to fourth week pustules which originate may appear around the finger and towards the joint towards the first stage but they may not become apparent until the second month when they have grown distal of the nail-bed. Hair which can be easily plucked at two weeks falls spontaneously in the third week producing generalized thinning and alopecia but the loss and the fourth week there can be near complete alopecia.

After 4-5 weeks survival of the patient is likely and although recovery may be slow permanent damage to the capillaries. A patient sent to hospital by the Ministry of Naval Medicine received an unknown dose of thalium in August 1915 and was only released from hospital in March 1940. Such was the toxic, wasting and neurological deficit. He had some more than 100 months to survive.

#### CHRONIC POISONING

Meredith reported three cases of chronic poisoning where thallium was associated with emaciation, distal nerve and muscle. The most common findings were severe polyneuropathy with the inability to walk, incontinence and pronounced emaciation. In two cases there was only slight hair loss. There was usually poor resistance to infection suggesting some impairment of immunity.

#### TERATOGENICITY

Thallium ingested during pregnancy can pass to the foetus and can be demonstrated in the placenta, umbilical fluid and liver in the foetus. Teratogenic effects are usually weak poisons that give an LD<sub>50</sub> of 10 mg/kg body weight produced serious studies of malformation in 20% of the embryos. The authors warning that in humans an oral dose of about 10 mg/kg body weight in the later of pregnancy of foetus and organs to the embryo might result in a significant increase to the mortality of malformation.

Dalgarno et al<sup>1</sup> conducted medical survey of a population living in the vicinity of a chemical

works that emitted dust and sulphur contained thallium. They found elevated urinary levels of thallium (range 0.1-74 µg/l, mean 9.2 µg/l) in the population ( $n=1100$ ). There is to be compared with the reference values based on an unexposed population of a mean of 0.22 µg/l and a 95th percentile of 0.50 µg/l. In Dalgarno and Scott<sup>2</sup> The study by Dalgarno et al showed no increase in the occurrence of congenital malformations in the foetus ( $n=240$ ) in the population studied.

#### TREATMENT

The lack of an effective antidote, to thallium poisoning is reflected in the wide variety of treatments employed over the last 30 years or so. Some recovery from thallium poisoning is considerable and does not correlate well with the dose it is not surprising that many of the effects of thallium differ. Furthermore many reports of the symptoms described are of an acute but often been based on the administration of only a few cases.

Clinical trial done by Scott (Scott, and Lawrence) EDTA sodium-saltly given in 1000 mg capsules, showed clinical control and malformations have all produced improvements have not been widely reported. Also potassium dihydrogen arsenate not to have proven effective. Diaphorase, thioarsine, thioarsine and diethyldithiocarbamate, thallium the hair loss have good recovery to some thallium poisoning in humans and animals. Apart from recovery as to these effects, arsenate, thallium, but have shown to be thallium in urine and potassium in urine while thallium arsenate thallium thallium in urine as well as to increase hair regrowth in thallium poisoning.

Potassium chloride therapy malformations thallium from the tissue and excretion total malformations. This redistribution of thallium increases blood levels and may aggravate cerebral symptoms, but within a few days clinical improvement is seen.

Forced diuresis with furosemide and mannitol in conjunction with haemodialysis can remove up to 40% of the ingested dose of thallium to be eliminated in the first week.

Haemoperfusion appears to be the most effective procedure for removing absorbed thallium. The absorption of thallium during the haemoperfusion being achieved using activated charcoal. The both effects of thallium (thallium and hypoglycaemic thallium) may however be more than 1000 mg.

Prussian Blue (pentachloro ferrocyanide)



## Does endoscopic sclerotherapy affect oesophageal function?

J. G. Williams, J. R. Turner and D. Backy

### Abstract

The effects of a liquid sclerosant, taken upon the oesophagus, has been used to assess the effect of sclerotherapy on oesophageal function. Oesophageal function was assessed both on 10 oesophageal varices treated and 10 that of a healthy high alcohol-consuming and then observed in a cohort of sclerotherapy.

### INTRODUCTION

Endoscopic sclerotherapy is now a recognized treatment for oesophageal varices which bleed. This treatment may result in severe acute and chronic (swallowing and functional) oesophageal changes in the oesophagus, but little is known about the effect on oesophageal function. It has been shown that peristaltic activity is increased by manometry and radioscintigraphy (1) and reduced after sclerotherapy but the patients in this study were not assessed before treatment. Backy *et al.* performed manometry before and after treatment in 15 patients and showed no effect on the lower oesophageal sphincter but a marked increase in swallow dysphagia in the body of the oesophagus (20% pre treatment and 50% post treatment) together with a marked increase in oesophageal reflux after sclerotherapy.

Radioscintigraphy remains as a sensitive test of oesophageal dysfunction and so, to extend this study further in the function of the oesophagus in patients with varices before and after endoscopic sclerotherapy.

### METHOD

Ten patients without clinical evidence of oesophageal disease were studied to establish a normal range. Ten patients with oesophageal

varices (8 alcoholic, 2 non) primary (variceal oesophagitis) were studied before sclerotherapy treatment for their varices. Seven of these patients (3 primary (variceal oesophagitis) and 4 alcoholic) variceal oesophagitis) for variceal bleeding. This was performed under diaphragm sedation using a 4.5 ml Olympus endoscope (Olympus GIF K7). Ethanolamine oleate was used as sclerosant and administered upon sites of 1-2 ml per varix was administered. Sclerotherapy was repeated in 4-6 week intervals until obliteration of varices had been established by endoscopy. Transit measurements were then performed.

Oesophageal transit times were recorded by following the progress of the end's 100% radiopaque contrast in 20 ml of water swallowed by the patient while lying supine under a large leaded x-ray gamma camera. The contrast was linked to a computer and data was recorded in 0.2 second frames only 60 seconds. A dry swallow was made at 50 seconds. Thirty second postural images were recorded. Time when contrast was generated from upper, middle and lower thirds of the upper, middle and lower thirds of the oesophagus and the stomach.

Transit times were measured in three ways (1) Arrived transit time was taken as the first appearance of a bolus of contrast in the stomach. (2) Oesophageal clearance was calculated as the time to clear 50% of swallowed contrast from the oesophagus. As the subject was observed at 1 minute intervals time taken were greater than 60 seconds.

Student's *t* test was used to compare the results from patients without oesophageal disease with those with varices. A *p*-value of 0.05 was



Table 1 Patient details and mean times before and after endoscopy

Patient	Diagnosis	Grading of Nodules	No. of Endoscopic Treatments	Complications	Pre-Treatment Asymptomatic Time (min)	Clearance (min)	Post-Treatment Asymptomatic Time (min)	Clearance (min)
1	IBS	a	3	Nil	12	—	15	(30)
2	Acute/Chronic Gastritis	—	3	Nil	15	20	18	21
3	Acute/Chronic Gastritis	a+b	3	Nil	25	55	25	60
4	Acute/Chronic Gastritis	a+b	3	Nil	8	80	10	60
5	Acute/Chronic Gastritis	a	3	Seizures—Oleated	10	17	10	60
6	Acute/Chronic Gastritis	a+b	3	Seizures—mild—no treatment	10	40	20	60
7	Acute/Chronic Gastritis	—	3	Nil	8	8	8	20
					n	T	n	T
					mean	10.66	15.14	40.8
					SEM	3.87	7.8	8.3







examined by a histopathologist unaware of the results or results of the per-operative investigations.

## RESULTS

The results of 80 consecutive per-operative investigations before liver surgery were analysed. US examination was performed on 71 patients, OCG on 54 patients, and 44 patients underwent both forms of investigation.

US failed to visualize the gall bladder in 14 patients (19.7%). All were subsequently shown to have gall bladder stones in operation. In the 57 patients where US was successful, gall stones were diagnosed in 45 patients, normal gall bladder in three patients and in one patient the gall bladder was reported as normal. Surgery confirmed 46 patients with stones and there was a confirmed gall bladder in whom it was not considered a diagnosis of cholecystitis. There was therefore one false negative report (1.7%) but no false positives.

Ultrasound was accurate in 75% of patients, it correctly diagnosed 43 of the 57 patients who had gall stones (75.4%) and was 100% correct in the instances with a contracted gall bladder. If an exclude the false negative cases, US was correct in 54 of 55 patients (98.2%) with no false negatives.

However, at times, in the series of previous OCG did not fail to fail.

If the 54 patients who underwent OCG an abnormal gall bladder was diagnosed in 45 either as gallstones, being mistaken by the examinee, or because of non specification of the gall bladder and a contracted gall bladder or cholecystitis in 19 patients. Surgery confirmed the presence of gallstones in all 44, cholecystitis and the gall bladder in the remaining six was subsequently shown to be pathological in being due to cholecystitis or adenomyomatosis. There were no false negatives and no false positives.

OCG was therefore accurate in 100% of cases, diagnosing both cholecystitis and contracted gall bladder pathology.

In 44 cases both US and OCG were carried out. In 33 of these (75%) US and OCG were in agreement. In the other 11 OCG was correct whereas US was mistaken in one case (false negative) and failed in the other two cases. These three patients where US and OCG were both reported as the case of first investigation and did not include the 5% patients who progressed to OCG as a matter of policy because the US was not diagnostic.

## DISCUSSION

Old cholecystitis can fail because of non absorption of the contrast medium. This did not happen in our series and OCG proved to be 100% accurate in diagnosing the pathologically abnormal gall bladder. It is however a relatively easily interfering investigation which causes the patient the danger of radiation and the possible hazards of easily failed results in the contrast medium. As its efficacy appears well proved but it has some associated problems, it may be better held in reserve as clearly detailed studies as a less expensive, quicker and safer non-invasive procedure if necessary that is relatively accurate.

Our results would suggest that abdominal ultrasound as such an investigation though in this study we witnessed no complications or false effects from either technique.

The results indicate that US is capable of making a correct diagnosis in patients in their opinion of pain and tenderness does not vary on false positives. It would the other way, as to proceed from US to OCG only in those cases where US failed to visualize the gall bladder or reported it as being normal. In this way the false negative results will be corrected and a diagnosis will be made in those where US had been unsuccessful. We have not had a problem operating on US positive findings alone and no false positives have appeared in our series.

However, if OCG is abandoned totally in favour of US then in a series where first investigation is cholecystitis and pain will not be diagnosed<sup>1,2</sup> and if gall bladder pathology not associated with gall stones it is important clinically in that case, and with gall stones then OCG must be valued and it is not probably to be recommended in the circumstances of choice.

Adopting a policy of proceeding from US to OCG in US failures or normally then in the series of patients of those that underwent US only 14% required a true OCG or conversely 15% were cured the patients rate of the examination without diagnostic delay.

We have not attempted to calculate total costs and relative rates for such examinations because the 75 patients entered had not a random sample having by diagnosis been selected for surgery on the basis of US, OCG or both. However, it is reasonable to view the absolute accuracy of both as a method of investigating patients with right upper quadrant pain without all patients referred for examination.

investigating, suggest, in a random sample including those with ascariphosis reported as minimal, being operated upon. This is ethically not possible and thus the accuracy of the investigations is best compared to those patients confirmed as having an abdominal gall bladder prior to operation.

As a result of treating these two cases of investigating our senior gall bladder disease we would recommend a policy of US as the first routine followed by CFT as those where an abscess is not detected. If the abscess is not seen on US, then as the senior report there may (major) and (not) gall bladder (2) and the patient sent for radiology department.

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## Caries activity in a sample of 25-year olds—Sugars or dentistry?

D. C. C. Alexander

### Abstract

A survey was performed in one of the dental schools of a sample of 25-year-old BSc dentistry students, analyzed for caries and dental health in relation to some social factors into the future. Mean dental treatments of 0.26 teeth had 0.71 to 0.82 restorated. The highest caries rates were found in the second of three sites but overall the frequency of the greater number of restorations was not related to the site, the anterior already had high caries rates. The possible reasons of this continuing decrease were not examined and no conclusion is made here but that dental health is being observed in the dental school, for the treatment of dental for treatment, does not make them in the treatment of patients and the practice of dentistry.

### INTRODUCTION

Caries, health of personnel in the Royal Navy is limited by the fact that of all young people during war years, young people who were found on oral physical exam and so dental health systems that allow for the treatment of war dentists in the replacement of existing dentists who are leaving. The dental health of the personnel is considered of the highest importance in the war years. Dental health is considered in terms of the disease, of dental and the replacement, dentistry.

The survey of dental health of dentists in the United States 1980 made comparison with the dental health of the U.S. population of similar age. Little correlation between was reported. Correlation was not found in the same way of the population of the 25-year-old age group. The mean number of missing teeth was 7.1 which compares with 12.3 for the same age group in the U.S. However, most noticeable

the mean number of filled space per person is almost double that of the U.S. 11.1 compared with 6.6. The mean overall coverage in the number of dental missing or filled teeth (DMFT index) throughout a 20-year period was 4.3 teeth. Such results suggest that a deep seated awareness philosophy of dental care, perhaps as that health is changed by dental personnel through appropriate dental systems rather than being created by the individual himself replacing pre-arranged effects, prevent new measures introduced by the dental profession.

The age distribution of the BSc subjects is comparable with a normally of young adults of late teens and early twenties. The age distribution of a population is approximately 10 to 20. During this period of life, the population is not from dental care, the risk of periodontal disease, particularly increasing with age.

The high rate of caries is emphasized by the reported high levels of sugar availability in the diet provided in the U.S. The median reported the consumption of sugar by the U.S. population is 14 kilograms per head per year increasing to 7.1 kilograms per head per year by the increasing percentage of non-smokers and with dentists. Colwell and Thomas reported that as a sample of three conventional systems, mean sugar consumption was equal to 10 to 15 kilograms per head per year. The consumption of sugar by the U.S. population is reported to be 14 kilograms per year. Whereas it is not possible to avoid all sugar in the diet, which sugar and non-sugar sugar for various early products in the food provided in the diet level of added sugars was found to be

approximately 10-15 cigarettes per day per year. In a recent study of the dietary intakes of sailors in British and Pakistan communities of Indian origin, it was reported to be a maximum of 34 cigarettes per day per year. The President Adhikari Commission Report (Adhikari) also commented that the consumption of opium (probably reduced to means of payment) was 10-15 grams per day per year. 10% per cent of which may be accounted for by added sugar. The high levels of sugar consumption by men in sea areas have an adverse effect upon the dental health of the Royal Navy. In addition to the new or previous, various lesions or by consuming the Micro-organisms of varying resistance to antibiotics or chemical injury.

The data taken for a certain period to develop a relatively short (7-10 years) - where management with the population period for other diseases on which dietary inadequacies are, not factors. Thus the study of nutritional in dental disease is a more complex endeavor to demonstrate the adverse effect of the service diet on the very sensitive dental.

## AIMS AND OBJECTIVES

### Aim

The aims of the survey are to determine the nature, in dental cases and nutritional status occurring in a sample of Royal Naval personnel and, their entry into the service, as measured by the surveys on the numbers of decayed missing and filled teeth (DMFT index) and tooth surfaces (DMFS index) as originally described by Horvitz and Palmer (1961), and to discuss the probable causes in order that appropriate be proposed to prevent the dental from occurring, including development of new power and resources.

### Objectives

- 1 To select a sample of dental records (F 1002 211) for a single visit age group of enlisted naval personnel from dental records held in major dental clinics.
- 2 To obtain the following data from the sampled records:

At Entry—the number of decayed missing or filled teeth (DMFT) the number of decayed missing or filled tooth surfaces (DMFS) the number of missing teeth.

At May 1985—DMFT DMFS the number of missing teeth the year of entry the

number of entries of dental treatment received.

- 3 To analyse the data obtained for relationships between DMFT scores on entry, recorded on DMFT and number of entries, receiving taking into account the variables of age in years and length of service.

## METHODOLOGY

### The Study Population

The study population was chosen to be those whose year of birth is recorded on their dental records was 1940 (age 46 to 48 years) in the year the study was carried out in May 1985. In any sample drawn from such population it would be expected that the majority of subjects selected would have joined the Royal Navy on leaving school at age 16-17 years and had then been exposed to any risk factors similar to the Royal Navy for between eight and nine years. Such time interval would avoid sampling bias due to premature emigration.

The sample was drawn from all dental records held in the dental clinics in HMS Dryad (Dorchester), HMS Dryad (Plymouth), HMS Dolphin (Plymouth), HMS Culter (Plymouth) and HMS Nelson (Plymouth) by random selection of those whose calculated year of birth was 1940 (95-99%). Three large clinics were selected on the basis that they held large numbers of dental records and were situated at the extremities of the Navy.

On requesting the clinics to make the records available for the study as finite information as possible was given as in the purpose of the study was to determine such information the more data required, each clinic was asked to supply 50 records.

Two hundred and thirty four records were made available from which were evaluated for the following reasons:

- Not dental examination in the preceding 12 months (2)
- Adult dental (not original) records (1)
- Length of service less than four years (3)
- Incomplete records (7)
- Excluded on entry (1)

The random number of records fulfilling the criteria was 713 (sampling ratio 0.573).

### Data Collection and Analysis

The data were taken from a data tapekeeping. All third molars were excluded except in cases



Table 1: DMFT scores by Length of Service

<i>N</i>	Years served	Early DMFT	Current DMFT	Increase in DMFT	Equivalent annual increment in DMFT
68	4-6	10.3	11.6	1.3	0.28
45	7	9.1	10.6	1.5	0.22
68	8	8.8	10.0	1.2	0.16
70	9	9.3	10.3	1.0	0.12
Mean	7.6	9.3	11.3	2.0	0.28

Table 2: DMFT scores

<i>N</i>	Years served	Early DMFT	Current DMFT	Increase in DMFT	Equivalent annual increment in DMFT
68	4-6	10.3	23.0	12.7	0.78
45	7	10.0	18.8	8.8	0.68
68	8	10.0	23.5	13.5	0.71
70	9	10.3	23.5	13.2	0.78
Mean	7.6	10.3	23.3	13.0	0.74

no number of dental visits.

where a first or second entry may have been missing at entry 1 and a third entry entered in a second entry. Analysis was performed with the assistance of a statistical database management program.

#### RESULTS

The mean scores for the sample on entry were 0.7 DMFT and 14.4 DMFT. Little variation occurred in mean entry DMFT scores compared to var in entry range 4-10 (Table 1a and 2a). Current mean scores (Table 1b and 2b) were 11.7 DMFT and 23.2 DMFT, the mean variation being 2.0 and 8.8 respectively over an average 1.6 of 7.5 years. The equivalent mean annual increment in DMFT is 0.28. Whether the rate is more throughout or higher at entry rates or final scores and in that year varied in its composition.

The highest and increases in DMFT scores occurred in those who had been in the Service the longest time, as may be expected as they had up to a four year lead over those who only joined in 1961 (five years served). Those who had served 4-6 years had a mean lead of more

in DMFT of 1.3, an equivalent annual increment of 0.21 compared with those with one year's service who had a mean lead equivalent of 0.4 DMFT, an equivalent annual increment of 0.21 (Table 1a). The difference in equivalent annual increment between the length of service shows that those who have served the longest have the lowest rate of increase for the year 1967.

The greatest increase in DMFT occurred in those whose previous experience of dental or radiological diagnosis was the least when they joined in terms of DMFT on entry and the Royal Navy. Likewise those who are given lead higher DMFT scores demonstrated smaller increases. This is shown in Table 2.

#### Changes of Treatment

A total of 374 courses of treatment were recorded for the sample. The mean was 3.2 courses per rated group, 0-12. A course of treatment was defined as a consultation, radiograph treatment and completion of that treatment resulting in a clinically fit situation. Those with low DMFT scores on entry have

Table 2 Analysis of DMFT on entry and increase in DMFT on age 25 years

Entry DMFT	Increase in DMFT			
	0-1.50		2-50	
	n	%	n	%
0-4	11	4.0	18	6.6
5-8	49	6.6	42	9.6
9-14	30	8.0	27	8.0
15-21	19	8.6	14	9.2
	119	82.2	108	94.0

had fewer cases of extensive treatment than those with high DMFT scores on entry (Table 2).

The null hypothesis that there is no relation ship between DMFT on entry and the number of restorations removed is rejected (Chi-Squared equals 12.63 for six degrees of freedom ( $p < 0.01$ )). The increase in DMFT is also greater in those who have undergone the greatest number of restorations (Chi-Squared equals 42.1 for six degrees of freedom ( $p < 0.01$ )).

### Missing Teeth

The increase in missing, extracted teeth was low. The mean number of missing teeth on entry was 1.62 and on age 25 years was 1.98. This includes tooth extraction for reasons as early and thus is exaggerated due to the backlog of dentures submitted by the General Dental Services (GDS) and the Community Dental Services.

## DISCUSSION

### Experimental Design

This sample is likely to be representative of the average 25 year old in the Royal Navy. The chances of bias occurring are low due to the inclusion of all the SSN, post dental and the different methods of filling used on different clinics. Having entered into fixed research of individuals classified to in the preceding studies, results in this may be considered on basis of regular monitors. The effect which on this, results could be misleading. Tidwell<sup>10</sup> has shown that regular monitors on the GDS or covered short filled patients than individual monitors, but very often the subsequent work due to the Royal Navy is found to have much potential disease.

The sample was not analysed by category of dental or otherwise whether each category was represented in true proportion to the 625 25 year old population. Such analysis was considered inappropriate as such a small and random sample.

The method for assessing the degree of restoration treatment is rather crude as a precise indication of the amount of work in a course of treatment—no fillings placed in the same area are recorded as one course, whereas no fillings placed over six years may be recorded as six courses. This short coming is demonstrated by the example that also stated had a long interval of nine years between entry and the dental examination in the dental body that the individual's treatment had only been completed very recently but he had received very many fillings as a result of chronic from many different dental offices. We have the means of

Table 3 Analysis by frequency of Entry-DMFT and increase in DMFT age 25 the number of Courses of Treatment

Courses	Entry-DMFT				Increase in DMFT			
	0-5		16-		0-1.50		2-50	
	n	%	n	%	n	%	n	%
0	8	80.0	3	15.0	11	100.0	0	0.0
1	17	74.0	6	28.0	20	87.5	3	12.5
2	30	60.0	26	65.0	26	84.0	20	76.0
3	29	65.0	17	50.0	23	78.0	20	86.0
4	13	65.0	27	62.5	13	73.0	27	67.0
5	10	64.0	11	62.5	6	75.0	15	71.0
6-12	10	64.0	15	68.0	8	73.0	21	72.0
	118	82.0	127	68.0	118	82.0	108	94.0

the study, the data was restricted to only one source of treatment.

The measurements of data from the dental records was carried out by one WHO's Dental Survey Assistant. This person randomly selected 15 records of 15 for each side of the recorded data. An error was found. Errors may have been present as the dental records had missing measurements of the dental condition as was possible in that the time the dental condition was difficult to determine the cost number of filled surfaces as a result because of other people cleaning or not getting a person for surface. A family, have filled in several surfaces in places of teeth that could not be checked by reference to the dentures, the procedure was not correct.

These studies were included among the first published work and not any of previous studies for study age groups and dental treatment records for denture wearers for denture. The effect of the dentures will be to understand the dental services of the individuals studied.

### The Increase in DMFT Score

The mean denture score only, or DMFT score of two sides appears relatively high in the age group studied. Considering the changing nature of the denture and the age within the dental profession at large, results, particularly within this country, demonstrate increase in DMFT as an indicator of primary dental services. On entry into the Royal Navy, the score does not remain as constant would have been diagnosed a healthy, not requiring treatment at the time. For a more accurate of a more accurate, for patient, appear a more accurate point of view than are displayed, meaning as that denture wearers in age group there may become again orally in the Royal Navy, which is responsible for the denture. This may be the effect of either a high score, but increasing later in life than that actually occurred in the early years through some behavioral aspect of service life or a high frequency of diagnosis on the part of dental services.

The increase in the DMFT score, being present in those who have served the longest suggests that there is a cumulative effect of some aspect of service life causing dental cases of disease diagnosed as dental treatment. The mean annual measurements recorded are equivalent to the two groups that occurred in each year in dentures and may well vary. It is expected that the data are present in the early years of service when the patients are younger

and taking less responsibility, despite their own health and well being.

As the DMFT scores of those who joined in a later age (both three years interval) are not known for comparable ages (14-15 years) and statistical analysis does not show that in the sample there are no appreciable differences in DMFT scores in early and late age groups, there is an appreciable and possibly significant difference in DMFT. There is some evidence that DMFT scores increase as many DMFT as age 15 years, with length of service, though the difference is not always only present. This could be accounted for by the hypothesis that those who join in their twenties are of a higher educational status, having undergone tertiary education and are thus more aware of how their individual behavior may affect their health. Such behaviors may be supported by the mean range in DMFT scores on entry into service of age.

### Length of Service

Two potential variables that occur between those who join the Service in their teens as opposed to their twenties in this study is the Service during their years as exposed to regular dental visits and a high sugar diet, which those who join in their twenties would have their early twenties may not be frequent dental visits and have a greater freedom of choice in their diet (a low sugar diet).

### An Effect of Service Life—Supergum or Denture?

If it is assumed that before joining the Royal Navy sugar consumption is normally distributed above the United Kingdom mean of 14 kilos per year and that after entry into the Royal Navy, it is normally distributed above the mean of 17 kilos per year, the increased consumption of sugar there be considered as a more direct or indirect for the high rates levels observed. Alternatively, 87% dental officers have applied various diagnostic criteria and have diagnosed surfaces which have been left untreated forming holes. Although it is possible that diagnostic criteria in the new duty establishments (HMS) that only were present in threat of placing technicians than the criteria used by the civilian dental services by five years, any finding of dental surfaces would have been filled or early and caused an increase in the dental DMFT score. Therefore, the conclusion suggests of all dental officers around sufficient clinical work to find that the

only insured an equalization of chance across the two of Dental Service and therefore each possibly receive a more uniform amount for the observed differences in the amount of DMFT scores with length of service.

Early in the 1950s analyses differing dental treatment and standards. Whether this aspect of life results in any lack of oral hygiene and associated risk of exposure to fluoride treatments is unclear. No further data have appeared due to possible variations in fitness of the population.

The oral health increase in DMFTs of 3 & 4 also appears remarkably high. The problem of a progressively increasing in DMFTs across an individual's life in events is that the effects of previous restorative dentistry which may weaken enamel and increase secondary or recurrent caries and discomfort from caries do more. Periodontitis may increase secondary as an indicator of increased activity but will be resisted in replacement of existing restorations due to replacement needs, no new surfaces. Whether or not the cause of DMFTs increase is a result that the original restorations were placed on account of the teeth being diagnosed as carious, and the lifelong maintenance and replacement of these restorations is the price to pay for the original disease or trauma a diagnosis and oral management.

The life of a filling is reported to be between one to 16 months and 10 years.<sup>10</sup>

Group 2 studied the lifespan of 8726 amalgam fillings in a sample of 515 Royal Air Force personnel. Using life table analysis he established that the life of an amalgam filling was two years. He also reported that the life of a filling decreased with the number of teeth involved involved in the restoration and with poor technique of placement important.<sup>11</sup> This is probably because each time a restoration is replaced more sound tooth tissue is removed. Hence, a cumulative effect of need for re-working, materials becoming biologically apparent. Large restorations will survive, but after many years due to the limitations of the filling material and the time and cost. However, the environmental effect of 75 holes all signs put you may introduce a certain noise, which requires replacement are replaced much earlier on because of new disease rather than material failure.

Other factors to consider is that increases in oral cavity lesions are either not allowed the opportunity to remineralize or are treated to allow their progression towards a cavity. Due to the nature of service life in which patients and

their dentists move independently of one another so different jobs the opportunity for the same dentist to remove and monitor an early lesion is a very rare possibility. On every subsequent instance of undergoing treatment for a different disease the dentist becomes infrequently exposed to early lesions being monitored but towards emergency intervention. Only one dentist at a future restoration needs to decide to carry a few days delay, which reduces the opportunity to occur. The status of only having prophylaxis, monitoring or replacement (instead of treatment at one point in time). Any such decision focused to fill cavities that results in a lifetime of inappropriate restorative intervention. The report of the Dental Service Review Group<sup>12</sup> stated that such maintenance seems because some dental treatment provided is either unnecessary, inappropriate or neither very useful or a loss to be regularly expected.

#### Can Remineralization Occur?

However, remineralization should be given to whether or not a sugar intake, or such proper teeth will allow action or remineralization of enamel lesions to occur. If remineralization does not occur the initial carious lesion of 75 holes then maybe the dentist who refers to wait or study knows better than stating an already man will be coming out the current scheme by performing secondary prevention has various secondary prevention in exposures and time consuming for operator and patient alike and would be avoided altogether by a marked reduction in the probability of injury to the dent, whether both a very cheap and highly effective preventive measure and provide the standing effect of a restorative repair.

#### SUMMARY

Whereas the major factors may be in doing having the high level of dental caries and restorative dentistry the factor of major oral dental importance is the consequences of caries. The DMFT programme indicates that prevents attempts to control and prevent dental caries in the Royal Navy not being, with the result that much unnecessary dental treatment cost, is performed. Action is urgently needed to bring about a marked decrease in sugar availability and consumption and in developing better methods for dental dental officers to determine the rates of oral individual and to reduce the annual process of dental oral disease reduction of oral disease lesions. The single most risk of the dental system has been in being

about the prevention of dental disease. Here, over the margins of Sengars' report, these preventive efforts against periodontal disease by the group of instructors in oral cleanliness techniques reflect that the control of dietary risk factors and the promotion of the use of flossing.

# CONCLUSIONS

1. There is a high prevalence and incidence of Dental Caries as presented at the Royal Society.
2. Some aspect of dental life style is responsible for positive rates of caries rate reduction. This study clearly points to the very high level of sugar provided in the diet.
3. Attempts to control the disease are failing to reduce the caries rate in most cases.
4. A deep-seated scientific philosophy of caries may exist and more emphasis should be placed upon efficient methods of prevention.

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## Lung Function in Royal Naval Firefighting Instructors

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### Abstract

A five-phase investigation into the effects of Royal Naval firefighting training on pulmonary function occurred on February 1979 and 1980. Phase/Land 20, exposure chamber tests, to demonstrate changes in the lung function after an exposure, is measured by forced expiratory and transfer factor over a five-minute period in volunteers is measured by forced expiratory during a one day firefighting course.

Three papers describe the means of phase, all in which further lung function data was gathered from the volunteers at two months after the 20 day course. Although a previous analysis of the data indicated that smoke exposure had a significant effect on the transfer factor ( $P < 0.05$ ), this finding was negated ( $P > 0.05$ ) and the forced expiratory volume, as measured after Royal Naval exposure ( $P < 0.05$ ), the two systems observed were statistically different for several days.

Analysis of data collected on instructors who had left the school in the April 1980 phase failed to reveal any significant differences in these data, consequently, a further follow-up study (Phase 20) of these phase participants took place in May 1980. Overall significant exposures in 2 and 20%, were related to the fire training and during the school.

The changes observed are confounded by the high incidence of repeated exposure through the school year.

### INTRODUCTION

Two purposes of the RN fire schools are provide basic training in firefighting techniques applicable to shipboard fires. Training includes fighting wood, steel and oil fires, limitations are imposed in the school for approximately two years and may be exposed to smoke, heated steam a day three days of the week. Both the

type and frequency of exposure is known and relatively constant for each instructor. Although both have much in common, the low flow nasal system has been reported as suitable to the instruction, they probably are not due to the problems of exposure weight, body mass and hence cardiovascular and static risk of passing verbal commands, instead they probably choose to wear an air-filtration mask which provides very limited respiratory protection.

The aim of this study was to determine if the smoke exposure experienced by the instructors was, otherwise a living, these lung function.

Smoking is a complex and very serious hazard of thousands many of which can cause cancer, damage. The exact composition of the smoke will depend on what is burning, the atmospheric conditions, the length of time the fire burns and the speed with which it is extinguished. In simple terms smoke may be described as a suspension of small particles or heated gases with or without the consequences of the chemical breakdown of an otherwise bright and burning environment is found that 80% of the particles had a measured diameter of 10 or less and could therefore penetrate the alveolar spaces and be retained. Chemical suggests that it is mostly the contents of these particles (benzene, nitric and nitrobenzene) which cause the symptoms of smoke inhalation, but that smaller particles may also cause bronchospasm through mechanical action of pulmonary (cilia) receptors.

A number of professional bodies of the effects of smoke firefighting on lung function provide evidence that repeated exposure to fire smoke can cause decrements in lung function.

Young et al.<sup>10</sup> showed a twofold increase in the prevalence of chronic bronchitis among boaters with twenty or more years of service. Similarly Myers et al.<sup>11</sup> concluded that non-smoking firefighters with over ten years experience had 2 to 3 times the incidence of significant airway obstruction compared to firefighters with less than ten years experience. Leikin et al.<sup>12</sup> could only associate the duration of shift activity during an firefighting shift over 20 years experience. The most consistent studies of the British Fire Department indicated that experienced firemen had a higher prevalence of chronic respiratory disease than new firefighters of the same age.<sup>13</sup>

All three workers found that exposure during shift was a major factor in the production of significant airways obstruction, and it appears likely that any cross-sectional study of the effects of occupational smoke exposure may be skewed by smoking, before and Foster concluded from the results of their 1970 study that the occupational effects of firefighting on the lung are masked by a cross-sectional study.

A follow-up of the British firefighters after one year revealed decreases in FEV<sub>1</sub> and FVC greater than predicted but that bronchodilated volumes could not be demonstrated after three years or so (unpubl.).

The number of longitudinal studies of firefighters is small. Sparrow et al.<sup>14</sup> looked at two male firefighters with open spirometers at five years. They found a significantly greater loss of FEV<sub>1</sub> and FVC in the firefighters than in a non-firefighting control group. The most recent study of Douglas et al.<sup>15</sup> considered over one year showed large falls in the same variables but concluded that this was methodology and not origin. They suggest that a similar problem (different exposure and measurement techniques) could have occurred in the British studies, whilst Myers et al.<sup>11</sup> suggest that the reduced decline in lung function after the three years could have been a function of improved use of breathing apparatus or that the data suffered from left shift bias departments.

It was decided that for an evaluation of the effects of occupational smoke exposure on EM firefighting departments it is more a complete and direct would have to be carried out over a minimum of three years with measurements made on monthly.

In the longitudinal studies described above,<sup>14,15</sup> only simple summary (FEV<sub>1</sub>, FVC) was used. However these measurements are not

very sensitive to the early stages of airways disease. Clearly more sensitive tests are required to identify any early changes in airway function. To these ends a battery of tests was chosen which it was hoped would detect any such changes in our population. This included helium densimetry as used by Myers et al.<sup>11</sup> and Leikin et al.<sup>12</sup> in their studies of firefighters. Additionally to standard spirometrical problems, all the measurements from 1940 onwards were made by the same two operators (CS and RJ).

## METHOD

Measurements were made at approximately six monthly intervals over two years, between 1980 and 1982 following the 1979 baseline study described in Calverley et al.<sup>1</sup> The study included personnel who were recruited in the early years of the study but had since left the service.

### Forced Spirometry

An Ohio 180 dry spirometer linked to a P. R. Morgan type Dap Dry microprocessor (pressure 0.01 l flow and volume) and a Bryan 28000 open coil respirometer used to measure lung volumes and forced expiratory flow at varying in the methods suggested by Coates.<sup>16</sup>

Five forced expirations were performed (beginning on and the mean of the two most satisfactory measurements) was used to give the forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), ratio of FEV<sub>1</sub> to FVC (FEV<sub>1</sub>/FVC%), peak flow rate (PFR), forced mid-expiratory flow (FMF), and the flows of 25, 50 and 75% of FVC (FEV<sub>25</sub>, FEV<sub>50</sub>, and FEV<sub>75</sub>). Spirometric measurements were taken at three with the highest values for FVC and FEV<sub>1</sub> within 0.2 l and not marked by any technical errors. Where the FVC's were identical the measurements with the highest flows were used.

### Helium Densimetry

A test suggested as sensitive to early changes in airways function in the absence of expiratory flow is 50% of FVC breathing an 80%/20% helium oxygen mixture (helium/oxygen ratio 4:1).<sup>17</sup>

Following the air breathing measurements, subjects performed a further three forced expirations, each of irregularly chosen depth, from 0.5 to 1.0 l of the 80%/20% helium mixture. The two most satisfactory measurements were again obtained for comparison with the 50% values for volume.

tion of the mixture is 1 cm at 50% of PVC (GMEP 140/440).

#### Transfer factor

Following the flow-volume measurement, the single breath transfer factor procedure was carried out using a F. K. Morgan Model L Transfer unit. The transfer factor (T) the transfer coefficient (K<sub>L</sub>) and the effective alveolar volume (V<sub>A</sub>) were calculated. All tests were conducted with the subject seated and wearing a noseclip, and the results were printed, corrected to BTPS by the microprocessor.

#### Questionnaire

Each subject was given a validated Bursch-Council questionnaire on respiratory symptoms (RITA) with an additional section on occupational history in the last ten years. The questionnaire was repeated at yearly intervals (height and weight taken) and written to most subjects were also mailed at the first return.

To eliminate any correlation between  $\dot{V}_E$  measurements in the phase were made on weekdays morning between 0400 and 0600 before the children began work. All students were requested not to smoke in the morning of the test. Any that admitted smoking were not tested that day.

A log test tape to the subject for the school in order to permit the young men and women spent on the diagram form that spent on the others or less are shorter, or more from the school. This allowed a calculation of the mean of exposure to be made.

In 1961 a laboratory study was carried out to assess any changes in lung function on leaving the late school. The original 40 subjects were requested to repeat the laboratory test those that responded were tested using the same equipment but under laboratory rather than field conditions.

#### STATISTICAL METHODS

It was considered advisable to incorporate into the statistical model terms representing the length time on the Liverpool (accumulated time) and hence the last was expressed in terms of "effort" representing the time spent on the work.

The statistical model can be stated as  $y = f(x) + g$  equation (2) where  $y$  represents the sets of lung function observations for the parameter  $g$  in the series of parameters or effects to be estimated.  $f(x)$  is a mathematical function of the parameters or effects and  $g$

represents the residuals between the observations and  $f(x)$ .

The method of weighted least squares was utilized as the procedure for calculating the parameters and the effects in Eqn (2) in the non-linear non-linear analysis of the lung function measures, a minimum of 10 observations corresponding to the selection of maximum.

$$\sum_{i=1}^n w_i (y_i - f(x_i))^2 \text{ Equation (2)}$$

$$\Delta \text{ observing sets}$$

Various forms for the weight  $w_i$  and function  $f(x)$  have been considered in order to obtain a measure of the dependence of the findings (smoking, workload and environmental effects) and their interactions for the profile for a lung function measure for an individual during his working life may take the form shown in Figure 1. Evidence for a profile of this form has been obtained from studies of lung function in Royal Naval cadets by CH Rastan and "and Rastan & Polley" (unpublished data). If exposure to work has any detrimental effects on the individual, the residual effect might appear to produce different results in various ages. An individual first exposed at age 1 might show a decrease in age 2 or years later, while an individual first exposed at age 3 might show a decline by age 4 or years later. The changes due to the length exposure between ages 1 and 2 and between ages 3 and 4 could be smaller for individual (male) exposure time profiles.



Fig. 1 Hypothetical relationship between a lung function measure and age of an individual during his working life.

Although it is not possible to estimate any given individual's lung function age profile, it is possible to derive a profile for the group based upon the results of each individual. This age profile is adjusted for residual effects, length and the effects of work (and other exposure) represented by term on the function.



The regression considered for E1 in model 1 was of the form

$$\begin{aligned} E1 = & \beta_0 + \beta_1 \text{ year} + \beta_2 \text{ quarter} + \beta_3 \text{ exposure} \\ & \text{intercept} + \beta_4 \text{ exposure (intercept)} + \beta_5 \text{ length} + \epsilon \end{aligned}$$

where  $\text{length} = 1$  if an observation falls in the 1<sup>st</sup> quarter of the year and 0 otherwise. The vector  $\beta$  corresponds to  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ .

The weights  $w_i$  in equation 2 were assigned  $w_i = 1$  if all observations gave equal weight to make overall use the integral of the number of test sessions for the technician during his working period in the test period for each condition was given equal weight even though the number of test sessions may have varied.

No factor has been included in the model (equation 1) for personal working habits during the third quarter (4) of test sessions through the technicians: all of whom were in the age range 19 to 22 years in equation 17 to 28 years for the whole group.

The regression considered for E1 in model 2 was of the form

$$\begin{aligned} E1 = & \gamma_0 \text{ (exposure)} + \gamma_1 \text{ (exposure)} + \gamma_2 \text{ (exposure)} \\ & \text{intercept} + \gamma_3 \text{ (exposure (intercept))} \end{aligned}$$

where  $\text{length} = 1$  if the observation related to the 1<sup>st</sup> quarter and 0 otherwise;  $\text{length} = 1$  if the observation falls in the 1<sup>st</sup> quarter of the year and 0 otherwise. The vector  $\gamma$  corresponds to  $\gamma_0, \gamma_1, \gamma_2, \gamma_3$  with a intercept under investigation.

Any internal aging effect on the long term use of an individual is hidden within the other terms of the model: a some confounding may be present and care must be exercised in interpreting the results. If the effects of model exposure were pronounced as comparisons with aging effects arising over the short time an individual was studied then the term is not working in the model for design or test between observation date and date of passing for school should not be covered. The solutions of equations (2) were obtained for sample  $n = 30$  to 0.

Assumptions of the model and equations of the parameters associated with the exposure term arising in the models were made by comparing the exposures (1) for the model and for the model means the area involving exposure time squared and for the model including all exposure term errors. Under normal assumptions on the residuals the  $R^2$  value tests were evaluated to test the

significance of the selected term. Model 2 suggested information from exposures such as both rate and of time taken in the individual is considered not necessary for model 1.

## RESULTS

### Sample exposure

The technicians, within the flightlighting room have been sampled on one day during both a week and a short flightlighting exercise for the greater was most data. Design<sup>1</sup> index were used for data analysis of carbon monoxide and oxygen of nitrogen. Samples were collected also small increased metal content for subsequent analysis of nitrogen and carbon dioxide by mass spectrometry. The components measured are shown in Table 1 below.

Table 1: Smoke concentrations

Concentration	For	
	Wood	Steel
Oxygen (%)	18.2	17.0
Carbon Dioxide (%)	1.2	0.8
Carbon Monoxide (ppm)	0	2
Carbon Monoxide (ppm)	850	100

The analysis shows small amounts of carbon of nitrogen in the steel fire and the expected higher levels of carbon monoxide in the wood fire.

These values are likely to be more over exposure levels during tests in the forest of the test at peak fire intensity. During the actual training exercise, maintenance and normally non-ventilated inside the tests above in the tunnels, but near the observation looking as low as possible to maintain visual observation.

An analysis of the study logs of the observations recorded a typical 100 hours per year actually on the background 11 is not relevant, it is possible to appear the rate the number of hours spent within the flightlighting room up and down required in high vehicle concentration and the number of hours spent on the ground in the open air and hence exposed to air in terms of smoke. The term exposure time is used hereafter to represent accumulated time on the background in hours.

### Long duration during the flightlighting training

The mean lengths of the study, rates, or 10 observations aged between 17 and 28 were

Table 2. Least Squares coefficients significantly associated with exposure time (AR subjects)

LP measure	Model	Weight	Number of Instructors	Assessors	Parameter estimates (standard error) associated with Exposure time (hrs)	
FMR	1	Unequal	34	77	-0.0004913	(0.000418)*
	1	Equal	34	77	-0.001048	(0.000431)
	2	Equal	28	71	-0.000483	(0.000371)
FMR <sub>10</sub>	1	Unequal	34	77	-0.001108	(0.000412)*
	1	Equal	34	77	-0.001483	(0.000435)
	2	Equal	28	71	-0.000218	(0.000300)*
FMR <sub>20</sub>	1	Unequal	34	77	-0.000751	(0.000328)
	1	Equal	34	77	-0.000804	(0.000331)
	2	Equal	28	71	-0.000405	(0.000308)
T	0	Unequal	34	77	-0.001658	(0.000443)
	0	Equal	34	77	-0.001483	(0.000444)
	2	Equal	28	71	-0.001734	(0.000443)
VR	0	Unequal	34	77	-0.000402	(0.000343)
	0	Equal	34	77	-0.000617	(0.000373)*
	2	Equal	28	71	-0.000744	(0.000352)
FMR/FMR <sub>10</sub>	0	Unequal	34	77	-0.00487	(0.00216)
	0	Equal	34	77	-0.00448	(0.00223)
	2	Equal	28	71	-0.00383	(0.00118)

Note: An asterisk indicates that the 'exposure time' term does not significantly improve the model fit.

Table 2  
Using Bayesian structure: eight Bayesian models used with exposure term (Odds ratio only)

<i>LF measure</i>	<i>Model</i>	<i>Weight</i>	<i>Number of Iterations</i>	<i>Sessions</i>	<i>Parameter estimates (standard error) associated with Exposure term first</i>				<i>Exposure term squared</i>	
FAP	1	Unequal	24	85	-0.081063	0.0008947				
	1	Equal	24	88	-0.081180	0.000719				
	2	Equal	23	81	-0.080715	0.000783				
FAP <sub>10</sub>	1	Unequal	24	88	-0.000657	0.0007867				
	1	Equal	24	85	-0.001202	0.0006647				
	2	Equal	23	81	-0.000768	0.000787				
FAP <sub>10</sub>	1	Unequal	24	88	-0.000614	0.0003646				
	1	Equal	24	88	-0.001016	0.000312				
	2	Equal	23	81	-0.000628	0.000140	-0.0000145	0.00000013		
T	1	Unequal	24	88	-0.081386	0.000583				
	1	Equal	24	88	-0.081380	0.000688				
	2	Equal	23	81	-0.081600	0.000462				
VLS	1	Unequal	24	88	-0.000637	0.0003887				
	1	Equal	24	84	-0.000471	0.0003257				
	2	Equal	23	81	-0.000717	0.000716				
FAP <sub>10</sub> /FAPC <sub>10</sub>	1	Unequal	28	88	-0.00713	0.00188				
	1	Equal	24	88	-0.00768	0.00187				
	2	Equal	23	81	-0.00412	0.00100				

Note: An asterisk indicates that the exposure term term does not significantly improve the model fit.

of this, first as a sensitivity analysis. To this, a study of the interaction with age under 15 is in.

Analysis of the data was undertaken using the models outlined above using the various weighting options. Complete sets of data were available for 34 observations (28 students and 6 non students) over a two year period. As students' working conditions fluctuate, these were ignored. Parameter estimates, with standard errors associated with exposure rate are given in Table 2 for all subjects, and Table 3 for the non-student only. A significant level of 5% has been used in deciding if terms in the model should be retained.

From Tables 2 and 3 it can be seen that an exposure rate squared term does not improve the model is except for FEV<sub>1</sub> under model 2 conditions. For all the other lung function measures the effect of time on the background can be approximated by a linear equation.

One of the usual methods of non-student(6) it was not possible to conduct a separate study on this group.

As to terms which appear significant under all three model conditions are considered in the exposure. Of the variables studied, although we showed significant effects of smoking exposure on one of two models, only three showed a significant smoking exposure term under all three designs namely FEV<sub>1</sub>, T and TLN (FFVC).

It can be seen from the two tables above, that the parameter estimates associated with exposure time are of a similar magnitude in each of the models. An example of the regression equations for the three variables showing age

terms appears in the same is presented in Table 4, namely the regression parameters under model 2 conditions with equal weighting and without the term involving exposure rate squared.

For an exposure rate of 450 hours per year the maximum of the annual change in these variables are very large and several times the aging process predicted from the linear equations given in Table 2 from about 7 times for FEV<sub>1</sub> (FFVC) to about 10 times for T, although with the much smaller of subjects entered the confidence intervals around these maximum are large.

FEV<sub>1</sub>, FVC and somewhat surprisingly, also TLN, did not seem to age linearly affected by similar exposure under any of the model conditions.

Two approaches were used as an attempt to establish whether the measurements listed to be affected by time on the background improve over the measurements taken the school. Firstly a comparison of two sets of measurements was taken one year apart for those students who left the school in the intervening twelve months. This comparison was possible on 17 data sets. Of this twelve month period a mean of 3.7 months was spent at the school and a mean of 7.3 months as they spent job away from the school. The Wilcoxon signed rank test was used to assess the significance of any changes. Neither T, FEV<sub>1</sub> nor TLN (FFVC) showed any recovery (Table 5).

Secondly follow up data taken between one and four years after leaving the school was

Table 4: Regression parameters and effects for Model 2 with unequal weights. All subjects

Index	Units	Height (cm)	Age (yrs)	Age <sup>2</sup> (yrs)	Exposure (hrs)	Constant equation
T	mmol/lPa/hrs	0.0072	-0.468	0.00891	-0.0017	1. -4.43
						2. -4.71
						3. -4.84
						4. -4.73
FEV <sub>1</sub>	l/s	-0.026	0.171	-0.00012	-0.000075	1. -8.57
						2. -8.83
						3. -8.81
						4. -8.38
FEV <sub>1</sub> /FVC	%	-0.013	1.15	-0.0003	-0.0007	1. -173.6
						2. -177.8
						3. -176.4
						4. -171.0

<sup>1</sup> Exposure rate represented by time on the background (hours)

Table 8: Summary of lung function changes during first year after leaving the fire school

Index	Mean value before leaving school	Mean value after 1st year school	Mean change
FEV <sub>1</sub>	2.62	2.56	-0.06
T	10.77	93.18	-0.68
FEV <sub>1</sub> /FVC	80.10	78.40	-1.70

n=12

Table 9: Summary of lung function changes 3-4 years after leaving the fire school

Index	Mean early recovery	Mean late recovery	Mean change (late early recovery)	Predicted change by aging	Mean change corrected for age
FEV <sub>1</sub>	2.30	2.38	+0.10*	-0.10	+0.20*
T	10.05	12.08	+2.10**	-0.22	+2.32**
FEV <sub>1</sub> /FVC	77.41	78.08	+0.67 NS	-1.21	+1.88*

NS = Not significant. \* P &lt; 0.05. \*\* P &lt; 0.01. n = 12.

available for 10 of the original 26 subjects. In 12 of these subjects it is possible to compare early recovery data (measurements made during the summer after the subjects left the fire school) with late recovery data (measurements 3-4 years after leaving school). In 10 subjects (5 leaving FEV<sub>1</sub> and T, 5 leaving only FEV<sub>1</sub>) it can be seen that both FEV<sub>1</sub> and T showed significant improvements over the three-four year period. Taking account of the predicted decrease due to decline due to aging, these changes are twice as marked than they first appear, and when the analysis was repeated with the factor corrected FVC (FEV<sub>1</sub>/FVC) just reached significance levels.

## DISCUSSION

Interpretation of the findings of this study should take into consideration the design of the study and the methods used in the analysis of the data. A factor beyond the control of the authors was the small number of subjects available. Increasing the number of subjects could only have been achieved by extending the study by a considerable time and this proved impossible due to the operational requirements of the fire school, and changes in the training courses.

A major problem in analyzing data from a relatively small number of individuals is in coming to a model incorporating the various factors that have a bearing on lung function.

The difficulty with model 1 is the assumption that the lung function age profile for an individual follows the pattern established by the whole group. Model 2 avoids any assumptions about the lung function age relationship but has the difficulty of not allowing any change in age effects to be different across the age range.

The results obtained from the three models cannot be expected to give identical numerical results but a set of tests that the general findings of the different models are similar. It may be suggested therefore, that substantial changes in these variables may have occurred in some individuals.

It is not known whether physical changes in lung function are a result of decreased smoke exposure or large concentrations of ambient smoke or of an accumulation of exposure and exercise. Table 11 (a) very readily identifies reduced lung function one month after exposure to PFC combustion products and Upton et al. found no significant difference between acute post smoke exposure symptoms when and those recorded six weeks and eight months later. A further remark that is of importance to the subjects of the men who had been exposed to smoke during the Falkland conflict, long-term data similarly failed to show any systematic pattern of change in lung function which could be attributed to smoke exposure. Only by looking both pre and post

would be possible only given small changes to currently accepted views.

In the *Longflying* and *Long Range* trials, recorded spontaneous toothaches, and other transient (though a second one may well be possible to show one change). Most of all, on the other hand, measuring long duration in the beginning of a tooth ache, and again after analgesia, as has showed a small, acute decline in FEN, this decline being related to the severity of the tooth exposure and to the measured pain, the concentration of the tooth. They suggest that it is these reported episodes of long duration which may lead to chronic changes in pulp sensory function.

The chemical composition of the enamel to which the *Longflying* are exposed is already going to have a significant influence on the pattern of temporary dentition. Hill *et al* performed a detailed analysis of the enamel produced by burning dental fuel (an American *Longflying* and is similar but to this trial by the USN). The range of trace materials they studied was large and more of them particularly, more than all concentrations observed were, below the detection. TLN's has an 8 hour exposure. However, in most of these components, observed were the surface of small size (up to 100  $\mu$ m) in the lungs is likely to be a result.

The rough analysis we performed on the enamel produced by dental fuel was a good fit with the pattern of longflying, and would make reported by *Debra et al*. The major difference between the two studies is in the higher content of carbon monoxide and of chloride in the tooth enamel. We were unable to estimate chloride in the investigation but do think that the concentrations, particularly of chloride are important in the tooth enamel. With such a range of components, both in the pattern and particular trials, in which the dentition are exposed, it is difficult to predict which of them are likely to be responsible for the observed decrease in long duration. Additionally, substitution of the dose of tooth use, one *Longflying* reported during a toothbrush in a not possible. The nearest approximation to an index of exposure we could obtain was based on the frequency. However, in the comparison, actual test, on the frequency varied from week to week, it is only a rough measure of small tooth exposure.

Exposure to smoking is well known to have significant effects on long duration. <sup>1</sup> Thus, in all studies where a significant number of sub-

jects are cigarette smokers, it is difficult to separate the effects of smoking from average small tooth exposure. This is a problem which has been identified by other workers in the field. <sup>2-4</sup> It is perhaps remarkable that our group contained such a small number of non smokers (2 out of a total of 39) all at the lower end of the age range (19-27 years). It is quite possible but unfortunately in this study not statistically measurable that smoking may predispose to a higher incidence of long duration subsequent to occupational exposure. This has been observed for a range of other occupational hazards such as acid fumes, and asbestos. <sup>5</sup> Lohr *et al* and Myers *et al* were both able to demonstrate a significantly greater prevalence of caries, abscesses, or smoking for the *Longflying* compared to non smoking longfliers.

The changes in longflying are on having the dental fuel, are also associated with smoking. Of the 22 subjects tested in June 1985, seven had given up smoking or were less of the actual and those had changed from stress, however in hand rolled cigarettes. Thus, although they did not have evidence that the exposure is reversed to a greater degree than the current smokers, they may have, from its association between changes in smoking habit and improvement in long duration, as have in the first trial.

## CONCLUSIONS

*Longflying*, there is no carrying out, during an RDT, dental fuel, have been shown to demonstrate a greater decrease in contact measures of long duration than that predicted by the normal aging. As the great majority of these studies are non cigarette smokers, it is not possible to separate the effects of smoking from that of occupational tooth exposure.

On having the dental fuel there is an index, but that these changes are reversed, though they may be more difficult, in a number of changes in smoking habit.

## RECOMMENDATIONS

As a result of this study it has been recommended that RDT longflying contribution should never be taken, permanent when working in the field on the longflying. In the home, it is intended to change the dental environment to be, using, without dipping, toothbrush instead of wood and glass, tooth.

It is also possible, in some *Longflying* and on some on getting and having all these RDTs, although, both to control these within others of

proper learning and to monitor any changes in long-term learning from their visits to the fire school.

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and wisdom of God that hath hidden wisdom in an unknown to the first to be evident to all for the suffering.

On the European mainland the sea seems to have set in during the early part of the sixteenth century.

In 1544 Regimont, a physician from Decaux in Friesland, described to surgery something very of scurvy and was rather descriptive whether disease or had grouped several diseases under the title of scurvy.<sup>17</sup> He goes on to describe it as a hardy contagious and easily spread disease.

From here on the occasional descriptions of scurvy become more and more frequent.

In 1631 the Professor of Medicine at Wittenberg, Germany by name, described scurvy in living individuals from various countries and used most an instance of a living instance taken from a dead body. Later comes Dr. Joseph Wierowius (Groningen) London 1704 and Mathew Hall 1739 described the disease as being a very infectious poison.

While this had been happening in Europe the English physician John Woodall had been making great progress in England. In 1613 he was made Surgeon General of the East India Company. Faced the task of stopping the scurvy of the voyage out. He composed his first book *The Surgeons Mate*, which was published in 1617.<sup>18</sup> In this he gives a full description of the signs and symptoms of scurvy and created nothing of importance. He vividly described the disease and treated against two much going on blood-letting. He regarded the cause of scurvy as being an invisible and unobtainable as they have got no means to search them off and Woodall listed a number of remedies but he gave chief place to lemon juice and recommended that when ships, which in the Indies they, provide themselves with jars of Orange Juice in Limons, that would be to use this more freely in the Indies were much more effective than those found in France. He concludes the use of the juice of Lemmons is a pleasant medicine and well tried being found and good to be used the chief place. By a well known it.

With a particularly words of now is that Woodall intended to provide the East India Company to provide lemon juice for their ships. The chart records of 9 February, 1627 record that a report under the letter just was made to be supplied in the fleet.

Woodall died in 1635 and in 1647 Thomas Willis had signs and symptoms which much resembled

what the English, the Span and Portuguese, the Arabs, etc. believed the disease to be, induced or complicated by contagion and the treatment of his treatment was bleeding, purging and phlebotomy.<sup>19</sup>

Martin Luce (1654) although giving much of the treatment correct reported scurvy as being a form of venereal disease.<sup>20</sup>

It was Lind's work which started the fourth era, ship scurvy that only used the lemon. Lind was a Scottish surgeon and had served aboard ships for many years before joining the *Salisbury*. In 1747 during his eight month cruise, aboard the *Salisbury*, he collected the information for his book on the subject of scurvy, fully dedicated to Lord Anson as in 1748 he had 186 of them cured through scurvy. Lind collected a fine limited study on scurvy which though poor in, and with not every practice was a considerable achievement for the time. The patients were divided into six groups of ten. One group was given two spoonful of orange three times a day, another group 25 drops of clear oil of three times a day, while a further group took an electrolyte containing of rubus cast, galie, bilberry of Peru and gum myrrh, with every every medicine by themselves and credit of lemon as a cure. Two more patients were given a quart of water a day, while the eighth for diet he received consisted of half a pint of tea every day. Finally, ten of his patients, suffered the scurvy and had lemon each for six days. There were two persons recovered quickly out of them among the other men who had shown no signs of improvement.

In a response to one of Lind's letters the physiographer at that time wrote of Woodall's work. Surprisingly Lind was equally unaware of Woodall's significant contribution to medical science. Words of recognition is the fact that at least, the East India Company has sworn to implement Woodall's recommendation of supplying lemon juice to sailors abroad. It took the Royal Navy 40 years to implement Lind's and it was then that lemon juice was used, both Woodall and Lind realizing that that was all that was needed to conquer and conquer.

Order must go to James Lind for credit, fully realising the treatment of scurvy along with its historical descriptions of the disease, has perhaps it is true that many credit was given to the work of John Woodall. He researched, described the signs of a new and unpleasant the control treatment throughout the century

aspect of the study (1989). I suggest, however, that the limitations of using books as archival sources might have, paradoxically, had the same been limited for longer and more widely, a great deal of death and suffering could have been prevented.

#### ACKNOWLEDGMENT

The statements of the Calverton Naval Naval Hospital Historian are gratefully acknowledged.

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## The modernisation of Haslar

C. T. Parsons

Memories for modernisation of Haslar and many will immediately think of Christmas, officers and crew the work carried out in the 1950s and 1960s while other readers will recall the modern programmes of the 1970s. In fact, modernisation started almost as soon as the hospital was completed in 1767 and its following short history has not used details of the modern modernisation during the period from the middle of the 19th century until the end of 1960.

1854 The first major modernisation project was the installation of gas lighting. What is that time lighting was almost entirely by candle lamp. Today, a hospital in England, a Nightingale type ward lit by the standard ones.

1859 The drainage system was modernised and Cloaca maxima pipes were laid inside the old brick sewers and the direction of flow changed to drain into the sea off Haslar pier wall instead of into the creek by Haslar pier.

1860

1870 A main drain was constructed on the top floor of the Quary Block the bottom having been previously used as the space between B1 and B2 Colonade.

1884 This year saw the beginning of the conversion of B1 and B2 wards including replacing the original cast-iron beds with their double beds.

1886 The reconstruction continued with wards A1 and A2 followed by wards F1 and F2.

1897 Operating theatre was provided for the first time. There were reported to be two floors of the Quary Block overlooking the quadrangle. Two years later, in 1899 the total number of operations carried out was 15 a month. In 1900 the figure had risen to 1171 and the many of these were major operations such as the removal of the appendix.

1908 A group of four Royal Engineers (The Queen's Own) took a lot of work during 1908, they were the only fighting force a different composition from that of the Royal Hospital. Although it was not mainly for the construction of New Quay, engineers a soldier with a pump, water and sewage, was involved in the work.

1909 The Medical Store was opened. This contained 21 bedrooms, reading, music and indoor rooms and a dining room capable of seating 30 officers. The Quary Block Main opened at the same time contained 11 beds, rooms plus accommodation for the service staff. With the removal of these stores to persons, both modernisation, all these floors of the Quary Block were modernised.

1910 This year saw the completion of the Quary Hospital. This completely dominated the Quary Block, which was surrounded by a wall with colonnades and accommodation blocks together with a kitchen in the centre. To reduce the risk of infection, supplied to the Quary Block were delivered through a hatch in the wall.

1914 Recent works of the Quary Block was completed but this was not completed until 1916. This year, the engineers have begun to remove the old cast-iron beds from the Quary Block. The same and removed on the last night of the hospital to be removed and brought up to date and where the work, which will probably take up and work to complete is completed, the whole hospital will be a better place and more than 10 years later, the work is about to be completed.

1915 The Quary Block was opened. This was situated on the north was prominent of the hospital site, to B Block and contained 17 floors, an operating theatre, and various

1807 It was the first year in all hospital in which electric light had been used. (2) The year 1808 was an "A" throughout the hospital. There was still one the hospital of the 1808 high ceilings which had used that time contained the work was not all the most likely. The hospital of an "A" was, then, in the middle block was completed. In 1810, the total 1810 of an electric light from the main electric, in the main block. From 1810 all supplies were carried up the stairs while the prepared food was carried down.

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Canada Medical Centre, showing contemporary design, early in development.

services were provided, there were still no inpatient moderns at the South Coast when the new, commenced in 1940. There was also a new Receiving Room, Medical Records room, Museum and Library, and offices and clinics and rooms for the then specialists in medicine, surgery, and dentistry.

1943. This year saw the completion of a new, plus addition of St. Luke's Church, with the service of Re-dedication taking place approximately on St. Luke's Day.

1947. It was now necessary for use as the Dental and Radiological Departments, each having built the old wing. The X-ray Department was again modernized and enlarged.

1949. Between this year and 1950, A Block was not only modernized but also rebuilt. During this period, the entire wall between the new and old wings blocks was incorporated into a central corridor. The Children's Ward was brought into the main part of the building where it was located on 43-47 because the

Infant Ward, and for the first time, on the ground floor. It was now possible to have a Children's Ward on 45. With the completion of Block, the programme of modernization which had started with B Block before the War was completed.

1950. After several years of discussion and planning, during which time attention was to build a completely new hospital on a different site, a new one made on place one of yet another modernization programme. This was possibly a new ward block, X-ray, Dental, and X-ray, and on the top of the building, were added adjacent to B Block, and new staff accommodation of the Nurses' Living Quarters.

1951. Phase two of this major programme, was started. This was the modernization of what today is known as Corridor, the building linking the hospital wings, which had formerly been the central corridor. As has already been shown in a previous article in this Journal, this

building provides a new Casualty Department on the ground floor, together with new X-Ray, Civil Surgery, ENT and Ophthalmic Departments and a computerised Patient Administration and Record Department, alongside the first floor are new Operating Theatres. To cope with all this, new sewers were also provided.

During all these modifications, the programme of updating the nursing complement, although the wooden structures constructed by Tait some 50 years previously, still remained.

During the period covered by this review several new departments have been added to the hospital. These have all been accommodated in former ward spaces within the second major extension, but the total number of beds has consequently been reduced from 1,400

to less than a third of that number. These new departments include those of Nuclear Medicine, Cardiorespiratory, Central Nervous System, Clinical Photography, Modern Clinical Cytology, Administration and Planning.

This short account gives the story up to the end of 1984, but there can be no doubt that the modernisation will continue for some time into the foreseeable future.

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## South Atlantic Submarine Patrol 1984/85

T V R Taplin

I joined the Submarine on September 1984 with very mixed feelings. While excited in the thought of the forthcoming patrol, I was more than a little apprehensive as I had never been to sea before, let alone on a submarine. I was almost a little nervous about how the crew would feel about a non-submarine going to sea with them, although this fear was quenched in some as I was introduced into the crew by the command. I could not have been more welcome.

Introductions over. I was now part of the crew with work to do before the boat sailed for the South Atlantic the following week. The command showed me what he jokingly called the rule book, it was also the training officer. The regulating officer was where the resources and the two change shifts slept. What was going to be my job, the command of two small compartments and a locker under the command's bunk. On shore arrangements, as one of the medical stores were out of date so I decided to start which and checked the lockers out. Emergency equipment checked, working and first aid bags full. I was advised to not start getting operations and also to check that the crew were all up to date with medicine. A rest and medical team.

On arrival at the sick bay, I found the staff to be extremely helpful. In fact they had already checked the crew's medical documents and arranged for one of the personnel to come to the sick bay. I drew fresh water from the dispensary plus some milk. As I felt I might be useful to the and returned to the boat to meet them. Checking and the stores was quite getting them back on was impossible and I was sure the lockers had 'blown'. The conversation came to the matter with the use of another bunk locker which just allowed me to remain at it as I hoped, being the doctor would not take up

all my time on board. I was decided that I would also not to leave from maintenance as stores proved the command took me into the main to introduce me to the Main Provision and get details of my exact duties. After a welcoming part of beer and several talks, even space about medical and mission. I returned aboard to the sick bay where the staff had promised to give me some advice on submarine life.

Medical equipment checked and almost done as day. I was time for me to get my personal gear on board. I suddenly realised that I had never been shown where I was to sleep and the command went past that night when he took me into the two-ends and pointed to a mattress under the tarpaulin. I showed my personal gear in the locker. I had been given in the forward water and reported to the command to find out what was next on the agenda. I found it was a couple of days later to sort things out and the problems before we sailed. I returned on board as I was to get the Saturday and my first trip to the bridge.

The first leg of the journey from Portsmouth to Ascension Island was moderately successful. Apart from the expected rough nights and some sea sickness there was little to do. The only notable case was that of a Petty Officer with a perforated ear drum. The medical officer in the RAN Base at Ascension confirmed my diagnosis and instructed me to comment for treatment. After a few hours when, during which I managed to get a packet sent from the RAN to me. I had most likely was sent for the PO to be examined and surgery arranged. On the second leg I had rather more to do. Along with the usual duties, a Chief Petty Officer developed abdominal pain and I diagnosed soft stools. I placed him on bed rest and gave anal and analgine.

The medical state was the contrast with little back pain. He too played no football and was a musician.

Fortunately it was quite another two days before we reached San Carlos Water, where the staff, the resources, and myself were flown in to the British Military Hospital in Port Stanley in as the medical officer. The staff as the hospital were very helpful and but it was very advanced for us. The coverage was kept in for 15 days but not and the Chief Petty Officer after several years was diagnosed as having an unexpected fracture of the spine. The appointments, maintenance and assigned to the boat.

We arrived two patients in late Christmas, with him, modern. I administered two computer illness which was later explained by general staff to be the disease of RPA. *Salmonella* during a maintenance period between patients. I used my spare time during periods to visit Port I administered training which was quite difficult as I had never done Part I or 2. I also gave lectures to each crew on first and continuing maintenance, and the treatment of haemorrhage, fractures and burns.

During the Christmas period we were women contacted on various patients and given those letters, as shown previously. I was on several night watch duty, including first to the post, camp, and the back, but over I also became friendly with the Army International Health team and managed to have a few days working with them. Christmas came, a calm but unexpected and very strange the people. There were however some good times with various parties and the Forces show, along with one or three television shows which were filmed at Port Stanley. We had our own Christmas dinner on board and I was assigned as the co-ordinator of the party, music and decorated by the two doctors such as my own patients. It was during Christmas that the first symptoms occurred when a Chief Petty Officer fell off the back of a ferry, badly breaking his back, as badly as that that he had to be admitted to hospital and later was back to work as a medical case.

Christmas was a bad time partly to complete before leaving home in a boat which would call at various South American ports. I was intended to be home during one of the most major periods but having completed the patients and working with the boat. I was a bit disappointed as to missing the trip home. The Captain agreed and said that as even if he perhaps was to say he was sure it would be

useful to have him on board to deal with anything that might arise, especially the medical situation, on the homebound journey. And to this end a letter was sent regarding my intention to board. Fortunately was pushed for the time to mean for the whole trip. I was delighted, even when it did we were going to Barbados, Antigua and the USA. New Year party which we were to celebrate was planned and was celebrated on board the going back home while working the land-based image display time last party. Finally, we were off by midnight at San Carlos Water and then we were off on our last patrol before heading home on our ownboat route.

With the last patrol and Captain's rough over things on board (rubbish) was over. The ship became left in and we frequently stopped by' hands to boats. It was during one of these boats in the last that my most difficult one occurred. One of the men back at home himself amongst a number of Portuguese Men of War. By the time we got him one of the worst he had been doing several times and was in a bad pain. Knowing that this might be fatal I wondered if this was going to be my last service time ever. Once we had him down below, I set to work and removed the remaining remains. Already the man's whole was beginning to rot. As I made up some saline to administer water for local application and gave him Pethidin and analgesics, orally. The analgesic trying to work, the pain began didn't help much but after a while I managed to give some sodium bicarbonate, decrease and administered him to bed. I kept a close watch and after a few hours the condition subsided and by morning the only remaining sign was a slight swelling. This attack was caused by a low rate of flow when I went back off to sea but later that evening.

We reached Barbados without further story. Being Black, which means that the only date I had alongside was as an inboard guide for ships to visitors etc. This was not as much a duty as an introduction to the island later. Later as I sat by the board post, as the boat chugging into port, I started to see the first that I was, moving to home. My services were called upon several times during our last day, my mainly medical with occasional tasks which required experience and patience. I was, however, called out of bed one night as one some of the beds who had got into a slight water, making symptoms right side. No conditions were involved as it was the last further 'Amphibious' condition after administering two



workers to my mail's tent, and accompanying another such a diminished shoulder to the tent (supposed to work for breakfast) and a sharp to the point. A few days later, we left Antofagasta and reached Arica after a day's journey.

During passage I took the opportunity to give the crew a lecture on NTI which was both interesting and entertaining and was later to prove relevant, as someone I had met once who reported to me the local life I studied off-shore. The first was a Chief who needed his ears ringing and I did not turn the lantern on him. The second was the Leading Steward who appeared to have a fly trapped in his ear. When returned to the doctor, it was found to be a mosquito ring which had to be removed under local anesthesia. While on the USAP here I observed an irritation to treat the feet with the Chief's Companion. This graded up as a minor ailment three days later of the island with him and two others. Once again our way was free of any trouble and we went on our way to Port Lockwood.

I had only one case while on the ship, although some members of the crew visited the local VD clinic for their own treatment; there were only three greater cases. The case with which I had to deal was the Leading Cook who collapsed in a daze. He became febrile as in the early hours of the morning and collapsed while the First Lieutenant and I were going to get him to his room. The paramedics were called but, because he refused to sign the form, they were unable to take him to hospital and

left. After a great deal of firm persuasion and a little worry, I managed to get the Cook to allow me to quarantine in hospital. Once there he was settled and did not seem to mind that one of his brothers was really working. He was kept in for a couple of days and then returned after being given a long leave, no taking care of himself. So although the USA was highly successful medically, it seriously worried us daily with five days in Desayrwood and three in Calando. None of the best times for me though, was the days spent with a local paramedic, known as Pico Lockwood.

The following were the main cases for the year. This was the largest part of the journey. Once I had made sure that all medical documents were up to date, there was little to do methodically with us fresh cases at the way home. However, the worst part of the trip was yet to come and this occurred after we stopped in Porton to clear our equipment then went off Glasgow morning in the morning. Being there this morning this time was close, was terrible. I managed to persuade the nursing officer to let me be in the casualty party on the way in and it was a feeling that I shall never forget. The words of kindly, the hand and the common. Recognized women came of the evening had learned. I really enjoyed the trip and a certainly gave me an insight into the culture and world that most medical health personnel were not normally going to see in a direct clinical situation. It was here I met people who like some age, and now I am certainly glad I made

*Editor's Note:* If it appears to be a fully qualified reference, please include the full name of the person in the text. The full name of the person is not given in the text.

## LETTERS TO THE EDITOR

### Detection of early ventilatory impairment in RM submariners

Sir

Clifford *et al.*<sup>1</sup> present an interesting report on symptoms in RM submariners. They refer to the standard practice of conducting basic sea escape training tests with a low FEV<sub>1</sub>/FVC ratio. That practice is obviously unsafe and may be altered as previously called to call the tests. It would well appear safer than that in persons with symptoms to postpone a low test or stop the exposure. However, a low ratio may be produced in two other ways. I have frequently found the usual observation that, for a tall man with large lungs, one second is a relatively short time in which to try to read the statement of what is a large volume. Recently, by careful analysis of data from 1421 London female taking part in a ten year longitudinal study<sup>2</sup> we have been able to demonstrate a significant inverse relationship between FEV<sub>1</sub>/FVC ratio and height, showing smaller values in taller compared to smaller men of the same age.

Secondly, as will be known to you, Crooks *et al.*<sup>3</sup> found that 484 kg, experimental divers had FVCs which on average were 20% greater than predicted. The mean FEV<sub>1</sub> was also showing the 10 to 14 inch tall FEV<sub>1</sub>/FVC ratio below 15%. My failure<sup>4</sup> has pointed out the epidemiological weaknesses of the study so that smoking history was not known and self selection of divers in study and selection of a comparison group of men with higher vital capacities was not discussed and should also be considered as a possibility. Nevertheless the arguments advanced for occupational factors producing an elevated FVC were plausible and could contrast with a normal or even superior FEV<sub>1</sub> so produce a diminished but perfectly healthy FEV<sub>1</sub>/FVC ratio—especially if the man were tall (see above). Comparable observations

have been made in taller divers and decreased fully otherwise.<sup>5</sup>

The finding by Clifford *et al.* of the low FEV<sub>1</sub>/FVC ratio demonstrates between 181 smokers and 121 non-smokers but that the FEV<sub>1</sub>/FVC does not as interesting and unexpected as also is the complete absence of co-morbidity. In our first results of London female data we entered smoking as a variable in the initial regression and then suggested an accelerated rate of decline in tall 40 years and over. Separation taking the large groups of smokers, non-smokers and ex-smokers separately showed that the less significant of accelerated decline was indicated. The reason is that smoking behaviour is well manifested with age, age of smokers vs. ex-smokers vs. non-smokers. That has been the crux of the problem for Clifford *et al.* It is true as given by the data that, whereas almost 15% of the smokers of FEV<sub>1</sub>/FVC, the smokers explained 40% took 9% of the for non-smokers is similarly explained. In our experience it is quite possible for ex-smokers and even smokers to discover themselves as non-smokers but not the other way round. A reanalysis of the 121 ex-smokers should be undertaken in detail only taking non-smokers for that selective measure of small survey abnormalities and a subsequent report prepared. This, equal to itself, can more than be called only improved to confirm the expected decline in these present finding of no difference in FEV<sub>1</sub> but significant change in FEV<sub>1</sub>/FVC ratio. Later say they are with such measures and findings.

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20.0 (15.0-27.0) age range 17-81. All had found the duration with age on both FVC and FEV<sub>1</sub> to be markedly increased, we felt that applying a factor of linear regression to parts of the age span in different smoking subgroups is wrong. We would be interested to see if members of the club from the London Inner Ring, Outer Ring, 1st Street and a lower low even questionably smoking cluster would reveal a cluster pattern in Dr Douglas' study.

Yours sincerely

D J Smith

C R M Seaming

I should also state, SGM came and spent professional antibodies on 60 (23%) out of 263 subscriptions. Six of the positive ones had a past history of pneumonia and earlier ones had other family members who had previously been positive.

These findings taken in conjunction with Seaming-Lancashire-Wales study suggest that this level of immunity is likely to be found throughout the service.

It may be of interest to note that some population groups in the UK have a significantly higher prevalence of hepatitis A antibodies, as is the case in the general population here in the West of Scotland.

I am etc

P J Warwick

Seaming-Lancashire-Cardiff R N

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## Further information against hepatitis A

I read with interest Seaming-Lancashire-Wales study (2) in your issue 1988/70: 159-161. The findings of antibodies indicating previous hepatitis A infection in 32.5% of 11 Adult Market coverage was clearly worth some time which I have recently obtained in Public subscription at the Clyde Submarine Base.

## Medical audit

As Medical audit has been the subject of much recent and continuing discussion in the medical press, and I wonder if the time is now ripe for the North Medical Society to assess the potential of this mechanism for improving standards. Surely one problem is not faced in the highest possible standards of medical care, and so, have a responsibility to them and our service to them.

We are all continuously reviewing our own performance in our everyday work. This is essential and, but we tend to only judge it on results. Perhaps we should be looking more at progress and establishing systems for reviewing them. Discussions with colleagues will always help to improve our work.

Medical audit is a mechanism for reviewing and peer review is probably a better term in General Practice. Doctors and potential learners have to regularly subject themselves and their progress to review by their education counterparts. Recommendations are made following these visits, but failure to reach certain final goals criteria would prevent a GP, proposed being accepted as a member and therefore unable to attend further study.

All of us on the Study have been subjected to various Final Officers' assessments but they rarely come to more clinical standards. Maybe





## OBITUARIES

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Prof. McIntyre joined the Royal Society in August 1960 and served as its English Secretary until 1969. He held the post of a Senior Lecturer in the Department of Zoology at the University of Cambridge, and was also a member of the British Academy and the Royal Society of Medicine. His last appointment was as the past Medical Director, Princess Elizabeth.

After leaving the RMC for his position as Assistant Medical Officer in the Military Hospital, Melbourne, he continued as a member of the committee on the human effects of the laboratory of Defense. He was a very popular member of the Royal Army Medical College, a hospital, as he had been throughout his service years. He was a generous man, a kindly man and a good officer who had few if any enemies and a good friend amongst them. He was very kind of a brother officer and there only under considerably

He was made an Officer (Member) of the Order of the British Empire in 1931 and appointed to the grade of Commander (Member) of that Order in August 1950. He was appointed CBE in the 1954 New Year Honours List.

He married late in life and rarely has with him other than a few years of marriage, which both take on a romance as he had no children. He stayed on in London as a chess professional then traveled to settle in his native Dublin where he had a business and a social life.

It had not been as if the other signed EMU checks and the common good would be achieved in the end. After the agreement, the world will be a better place.

Year	Age	Gender	Occupation	Education	Income	Assets	Liabilities	Net Worth
1980	25	M	Student	High School	\$10,000	\$5,000	\$0	\$5,000
1985	30	M	Teacher	Bachelor's	\$20,000	\$10,000	\$0	\$10,000
1990	35	M	Teacher	Bachelor's	\$25,000	\$15,000	\$0	\$10,000
1995	40	M	Teacher	Bachelor's	\$30,000	\$20,000	\$0	\$10,000
2000	45	M	Teacher	Bachelor's	\$35,000	\$25,000	\$0	\$10,000
2005	50	M	Teacher	Bachelor's	\$40,000	\$30,000	\$0	\$10,000
2010	55	M	Teacher	Bachelor's	\$45,000	\$35,000	\$0	\$10,000
2015	60	M	Teacher	Bachelor's	\$50,000	\$40,000	\$0	\$10,000
2020	65	M	Teacher	Bachelor's	\$55,000	\$45,000	\$0	\$10,000
2025	70	M	Teacher	Bachelor's	\$60,000	\$50,000	\$0	\$10,000
2030	75	M	Teacher	Bachelor's	\$65,000	\$55,000	\$0	\$10,000
2035	80	M	Teacher	Bachelor's	\$70,000	\$60,000	\$0	\$10,000
2040	85	M	Teacher	Bachelor's	\$75,000	\$65,000	\$0	\$10,000
2045	90	M	Teacher	Bachelor's	\$80,000	\$70,000	\$0	\$10,000
2050	95	M	Teacher	Bachelor's	\$85,000	\$75,000	\$0	\$10,000
2055								

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Stegmann C, Wernicke H (2003) *Handbuch Kalkstein*. 2nd edn. Vieweg, Wiesbaden, 364 pp

[illegible][illegible]

As a young man Ray was a like ordinary government lad in his later years he was shattered by witnessing all kinds of heinous crimes and had remained being involved in financial crime.





## SERVICE NEWS

### HONOURS

#### QUEEN'S BIRTHDAY HONOURS 1988

*Member of the Order of the British Empire*  
Miss Ann Robinson RSC  
(Late Medical Officer) QAEHNS

*Officer of the Order of the British Empire*  
Mr J. E. W. Moore  
(Principal Scientific Officer) MOD

*Member of the Order of the British Empire*  
Winston Officer Medical Technician (Late) D/W Ralph

*Baroness Josephine Marill*  
Civil Medical Technician (Late) R/L Scott  
(Retired) RSC

#### The Most Excellent Order of the Hospital of St John of Jerusalem

*Officer (Honorary)*  
Sergeant Commander, D/L G. A. Cooper QHMS  
Sergeant Captain, S. Rufford QHMS  
Commander (MR) H. R. Barker

### IN MEDICAL AND DENTAL OFFICES

#### HIGHER QUALIFICATIONS

Sergeant Captain P. J. Trumble—FFOM  
Sergeant Commander A. R. Marsden—FRCP  
(Retired)  
Sergeant Commander A. E. J. Hodges—RFFOM  
Sergeant Lieutenant Commander D. G. Jones—  
MRDentOM & RPOD  
Sergeant Lieutenant P. A. Glyn—FFRACS

#### Senior Specialists

Lt Col. Michael  
Sergeant Lieutenant Commander J. A. Ramsay  
(Retired)  
Sergeant Lieutenant Commander D. W. New-  
comb  
(Retired)  
Sergeant Lieutenant Commander C. G. Johnson  
(Retired)

### CONSULTANTS, SENIOR SPECIALISTS AND SPECIALISTS

The following professional appointments are  
retained:

#### Consultants

*General Practice*  
Sergeant Captain, J. O. Seal  
(Retired)  
Sergeant Commander M. C. Thompson  
(Retired)  
Sergeant Lieutenant Commander D. A. Turner  
(Retired)  
Sergeant Lieutenant D. G. Brice

#### Specialists

*General Practice*  
Sergeant Lieutenant, T. C. Campbell  
Sergeant Captain, D. M. Talbot  
(Retired)  
Sergeant Lieutenant, D. J. N. Gough  
(Retired)  
Sergeant Lieutenant Commander, M. N. Jeffery  
(Retired)  
Sergeant Lieutenant, D. V. Long

#### TRANSFERS TO FULL-TIME COMMISSION

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Sergio L. Larralde, *Computer (D) I. 4, 1998*

Responsible: **Lawrence A. F. L. L.**

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1. *Journal of the American Medical Association*, 1997; 277: 1039-1043.

**Figure 1**

**Abstract**

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PLANNING FOR THE FUTURE

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**PROMOTIONS**

To Lieutenant Commander (MS)  
C. Marshall

To Lieutenant (SINCE)  
A. Hughes

To Warrant Officer Michael Armstrong  
A. Film

To Warrant Officer Medical Technician  
D. P. Ann T. Oldroyd

To Chief Petty Officer Medical Assistant  
J. C. Cavill, C. J. Lloyd, D. J. White, R. L. Ann, C. E. Mann, E. C. Eddies, M. Wadley,  
A. Bennett, M. B. Shaw, M. E. Duffin, A. D.  
Davis, T. G. Widdows, G. P. Bennett, M. &  
Scott, P. C. Martin, J. Smith

To Chief Medical Reception  
W. B. Patterson, S. A. Davis, D. B. Henderson,  
M. J. Gerrard, H. D. Morris, J. T. Wilson,  
I. Jenkins

**RETIREMENTS**

Lieutenant Commander J. A. Sturges  
Lieutenant D. B. Pyral  
Lieutenant M. R. Lamberton



Miss A. Lamberton was recently awarded the Queen's Medal for Merit, a rare and honourable distinction, for her services to the community. She was born in 1925 and is now 45 years old.



Mr. J. A. Sturges, Lieutenant Commander, is retiring from the Medical Services Branch. He was born in 1925 and is now 45 years old.

## QUEEN ELIZABETH'S ROYAL NAVAL NURSING SERVICE

## NEW ENTRIES

Senior Nursing Officer, Mr. M. Rowan  
Miss H. B. L. McElroy

Nursing Officer, Miss D. T. Cross  
Miss J. V. Hunt, Mr. J. J. Collins

## PROMOTIONS

To Superintending Nursing Officer  
Miss J. Brown, Miss M. E. Owen

To Senior Nursing Officer  
Miss A. J. Stephens, Miss M. Warren, Miss L. B. Turner

To Chief Clerk and Quarters Assistant  
A. E. Roberts

## RETIREMENT

Miss Ann Robinson, Director of Education, Nursing Institute, and Mission in United Queen Alexandra's Royal Naval Nursing Service, retired in April 1944 after 25 years in the Service.

Harold, John North Wright, in East London and educated at Edinburgh Ladies College, later the Mary Balfour School, Ann Balfour, completed her Royal Naval Bank Children's Nurse, training at the Royal Hospital for Sick Children in Edinburgh and then gained nurse training at the "Warner's Infants' Clinics." She joined Q.R.N.S. in December, 1933 as a Nursing Sister and served on the Royal Naval Hospital at Portsmouth, the Royal Naval Air Station at Portsmouth, the Royal Naval Air Station at Aldershot, as hospital maid on the Royal Naval Hospital, Harlescot before being promoted to Senior Nursing Sister in 1939.

In the same year she was chosen for the first time on the Royal Naval Hospital at Harlescot, where, during the summer of the Royal Naval Hospital at Harlescot, she remained in the Royal Naval Hospital at Harlescot, Harlescot in 1939 and 1941 she was transferred to the Royal Naval Hospital at Harlescot. After promotion to Superintending Nurse in 1939, she completed two years in the Royal Naval Hospital Harlescot before returning abroad, then with the Q.R.N.S. Royal Naval Hospital at Malta. A further period of service at Harlescot followed by two years at the Royal Naval

Hospital at Gibraltar. Returning home in 1943, she then completed a period of temporary duty on the staff of Harlescot and has Q.R.N.S. as a nursing sister having a period of recuperation at Harlescot Park, Harlescot.

A visit to the Royal Naval Hospital Harlescot was followed by promotion to Mission in 1939 when a title was appointed as Matron at the Royal Naval Hospital Plymouth. In 1939 she became Deputy to Matron at United Q.R.N.S. in London, and previously at Harlescot. Matron since Principal Matrons Officer at Harlescot since 1941 she was appointed to the staff of Harlescot Royal Naval Hospital Harlescot when it was based at Harlescot and later then joined the staff of Harlescot Royal Naval Hospital Harlescot Harlescot at the Royal Naval Yard at Devonport. In April 1943 she was promoted to Matron at Harlescot and appointed Director of Matron Nursing Service. Following the incorporation of the Harlescot Harlescot Harlescot she was appointed Director of Harlescot Nursing Service in January, 1945. Miss Robinson holds the Royal Bank Certificate of Honor and the Order of St. John, and in 1941 was awarded Harlescot, Harlescot Harlescot to Harlescot, the Queen Harlescot Harlescot and Harlescot with her a large number of Harlescot and Harlescot for four centuries of Harlescot and Harlescot.

## ROYAL NAVAL RESERVE

## PROMOTIONS

To Surgeon Lieutenant Commander  
Mr. J. J. Smith, R.N.R.

To Surgeon Lieutenant Commander (R)  
Mr. E. J. Cooper, R.N.R.

To Surgeon Lieutenant  
Mr. C. P. Williams (R.N.R.)

## RETIREMENTS

Surgeon Lieutenant Commander C. G. Church  
R.N.R.

Surgeon Lieutenant Commander A. S. Harding  
R.N.R.

Surgeon Lieutenant Commander A. F. Parker  
R.N.R.

Surgeon Lieutenant Commander M. W. G.  
Went, R.N.R.





## Editorial

### The Blending of Colours

The creation of a tri-Service Defence Medical Services Headquarters took place at the end of December 1984 in reply to recommendations in the Yellowside report even before the realisation of Headquarters: there had been increasing interplay between the medical branches of the three Services. In the field of postgraduate education studies, the Defence Medical Services Postgraduate Council and its various tri-Service Specialty Boards had ensured inter-Service coherence and a constant thrust towards improved professional training of medical officers. Despite periods of stress, the very hard working Surgeon Commander (Naval Medicine & Transport) succeeded in coordinating the views of the Navy Medical Services as Chairman of the DMSPGC and helped to prepare terms of tri-Service support at other meetings. His continued medical problems have recently impeded his usual vigour and he has been widely missed.

A series of five Combat Casualty Clin conferences between the Royal Naval Medical Service and the US Navy-Marine Medical Services were systematically presented by Surgeon Commander Richardson: these focused attention on 'apocryphally military' medical matters and he ensured both Army and RAF representa-

tion and continued subsequently. The whole range of military themes was considered: the current state of knowledge was fully reviewed and followed by the identification of Research & Developmental requirements. Progress in these fields will fall to the next Deans of Naval Medicine.

The number of cross-Service appointments prior to Yellowside had been limited by manpower shortages affecting all three Services. Nevertheless, advantage had been taken of specialised courses run by each of the three Services which led to some cross-Service appointing to training posts thus reducing service secondments. Historically, each Service has developed a high degree of expertise in different areas such as Underwater and Aviation medicine and in certain clinical specialties which offers scope for increasing exchange of expertise.

The present Medical Director General (Health) has recently set the important precedent of appointing experienced Naval medical officers from the clinical disciplines to Army and RAF hospitals abroad. This step will forge a closer link and understanding between the three Services: it sets the scene for exchange appointments in the future and these will be welcomed by medical officers seeking to broaden their experience geographically. It is also very desirable that exchanges take place between medical Staff Officers in order to

proper understanding, within each Medical Service, of the extensive plans to cope with different war time tasks. If the Tri-Services Directorate is to discharge its task, the staff must be at one with the requirements. Meanwhile a major exercise will have taken place which will significantly improve single service knowledge of inter-service plans for war.

A major thrust in further improving the capabilities of those who would serve in a "paramedic" role in war is also taking place within the Royal Naval Medical Service. Firmly and appropriately in their

war roles also needs to be built into medical officers during their specialized professional training. Achievement of these two aims needs to be hastened but requires the support of those civilian Colleges and Faculties who have so effectively sustained our training schedules and ensured that they lead to recognized professional qualifications. A flexible approach by both Service and civilian authorities is hoped for.



## The gastroenterological manifestations of AIDS and HIV infection

A. R. O. Miller

*Reprinted from the Physicians Index with permission of the Editor*

### Abstract

Disturbances of gastrointestinal structure and function in patients with AIDS appear not only to be a frequent, frequent or other as yet unidentified factors. Gastrointestinal signs and symptoms are frequently the first clinical signs of the disease. In fact, AIDS has been not developed clinical manifestations of AIDS, although it is not clear if these AIDS. This review examines the various clinical problems which can affect the gut in these groups.

### INTRODUCTION

It is now increasingly recognized that the acquired immune deficiency syndrome (AIDS) as defined by the World Health Organization (WHO) and Centers for Disease Control Atlanta (CDC) is only one of a number of potential clinical consequences of infection with a recently discovered human retrovirus. While there is general agreement that this retrovirus causes AIDS, the degree over its time period, it was originally isolated by Montagnier and colleagues in Paris<sup>1</sup> and called lymphadenopathy associated virus (LAV) and retrovirus isolated and grown by Gallo's group in Bethesda, USA who called it human T-lymphocyte virus-III (HTLV-III).<sup>2</sup> A subcommittee of the International Committee for the nomenclature of viruses has recently proposed that the virus be known as human immunodeficiency virus (HIV).<sup>3</sup> This name has yet to be universally adopted but will be used throughout this article.

Infection with HIV may cause no symptoms which may persist as an incubation or a prodromal fever type syndrome at the time of seroconversion.<sup>4,5</sup> It is understood that progression of infected persons represents the

main symptoms occur often, and it is not clear whether it represents a good or poor sign for the overall prognosis. Individuals who have antibody to HIV but seronegative may remain asymptomatic for a variable period of time and it is possible that some infected individuals will never develop clinical or immunological manifestations of their HIV infection. However, as the length of follow-up increases, it appears that a larger proportion of infected subjects are becoming symptomatic. Recent reports suggest that between 50 and 60% of long-term seropositive individuals, have some form of HIV-related illness<sup>6,7</sup> and this proportion may increase for time with time.

Before the identification of HIV, when AIDS had a poorly defined definition, two related conditions were seen in groups at high risk for AIDS: persistent generalized lymphadenopathy (PGL) defined as lymphadenopathy in at least two interdigital sites persisting for at least three months with no identifiable cause<sup>8</sup> and AIDS-related complex (ARC) defined by a combination of signs and symptoms including fever, weight loss and diarrhea.<sup>9</sup> Since the discovery of HIV, several attempts to classify the illness a producers have been made.<sup>10-12</sup> The most comprehensive comes from CDC and with slight modification will probably become widely used (Table 1).<sup>13</sup>

### GASTROINTESTINAL PROBLEMS

Gastrointestinal disturbance is common in AIDS patients and is usually considered as opportunistic, viral infections or malignancy.<sup>14</sup> Any one of several gastrointestinal conditions

Table 1 Clinical staging of HIV related disease (adapted from 1988 18, 134-16)

Group I	Acute infection
Group II	Asymptomatic infection
Group III	Primary generalized lymphadenopathy
Group IV	Other disease
A	constitutional signs (fever, no gill loss, diarrhoea)
B	neurological disease
C	secondary infectious disease
C1	disease listed in CDC/WHO surveillance definition of AIDS
C2	other secondary infection
	—oral hairy leukoplakia
	—oral dermatitis, herpes zoster
	—recurrent <i>Pneumocystis carinii</i> pneumonia
	—aspergillosis
	—mucormycosis
	—oral candidiasis
D	secondary cancer's (listed in CDC/WHO defined set)
E	other conditions

occurring in a patient with antibodies to HIV will define him as having AIDS (Table 1). Moreover, other gastrointestinal pathology may occur in patients who are said to have AIDS for some other reason (eg, chest disease) or in those who have antibodies to HIV but are not clinically defined as having AIDS (Table 1B). In the West the majority of AIDS cases present with chest disease (although many have no chest or gastro-intestinal problems) whereas in Africa diarrhoea and weight loss are the commonest presentations of AIDS.<sup>1</sup> In the US Lipman et al<sup>2</sup> of "Rock disease" (human HIV seropositive with AIDS) cases described in detail a common problem. In a cohort of long-term seropositive 29 months seropositive individuals selected to show 1/20 1% had seropositive diarrhoea.

As described by Lipman et al<sup>2</sup> and 101 city residents of the gay men for diarrhoea as a seropositive subject and mucosal pathology is not uncommon. The seropositive subjects may be classified as an untreated, immunological or neurological form.

#### Lesions of Mouth and Oesophagus

##### Candidiasis

The white plaques of thrush due to infection of the mouth with *Candida albicans* may well become and are associated with a number of less severe conditions, such as diabetes mellitus, immunosuppressive or antibiotic therapy. Oral candidiasis is common in patients infected with HIV and may be difficult to eradicate. Moreover it

may be a poor prognostic sign suggesting that they are about to progress and develop AIDS.<sup>3</sup> If the candidal infection spreads to involve the oesophagus then the patient has AIDS by definition (Table 1). Oesophageal candidosis may be asymptomatic although it usually presents with painful dysphagia. The radiological appearance on barium swallow examination are characteristic and in a patient with oral thrush, dysphagia and a complaint of a storage and reflux of oesophageal contents the diagnosis is swelled in those who did respond. Endoscopic results and biopsy should be performed as oesophagitis due to herpes simplex virus (HSV) or cytomegalovirus (CMV) are alternative diagnoses.

Oral candidosis may respond to standard local therapy with nystatin suspension or chlorhexidine. However, in most cases oral trimethoprim will be necessary. In oesophageal candidosis but patients will often be required. Patients usually respond within a few days to 200 mg daily but in difficult cases this can be increased to every day. In very severe cases intravenous amphotericin 100 mg daily has been advocated<sup>4</sup> but this has not been necessary in our experience at St George's Hospital. Candida usually occurs as a colonizer of therapy and patients may need to be maintained on trimethoprim indefinitely.<sup>5</sup>

Candida may cause problems elsewhere in the gut and in particular proctitis may be a problem.

**Table 5** Conditions which may affect the gut and in the presence of antibody to HIV and before the patient is having AIDS (HIV positive Dec 1985) (81, 88-118)

1. Cryptosporidiosis causing diarrhea for more than one month
2. Isosporidiosis causing diarrhea for more than one month
3. *Cryptophagus* pseudotuberculosis
4. *Acyrtus myxobolus* affecting the gut
5. *Cyrtosphaerovirus* affecting the gut
6. *Hespera simplex* affecting the gut (superficial mouth ulcers or ulcers or causing chronic infection) (more than one month's ulcers though or oral)
7. *Eggs of a nematode* of the gut

#### Oral Heavy Leukoplakia

A condition which may easily be confused with oral candida is oral heavy leukoplakia which consists of raised, poorly demarcated white plaques on the tongue or inside of the mouth. They have a rough surface and unlike candida lesions do not rub off. There is no effective therapy but they do not seem to cause serious problems for the patient although like oral candida they may imply a poor outlook for progression of disease. Recent evidence has linked the development of oral heavy leukoplakia with a papilloma virus and Epstein Barr virus co-infection, or oral epithelial cells.<sup>12</sup>

#### Small Bowel Lesions

##### Cryptosporidiosis

Cryptosporidia are small protozoan parasites which were first described as the principal cause of cryptosporidiosis more in 1983<sup>13</sup> and first associated with a diarrhoeal illness in animals in 1918. Human infection was first observed in 1976 and only 11 cases had been described prior to the AIDS epidemic.<sup>14</sup> However this was probably due to inadequate diagnostic methods for them as well as due to infection with cryptosporidia in immunocompetent persons can produce a diarrhoeal illness which is usually mild and self-limiting.<sup>15, 16</sup> It is thus clear that successful infection can occur.

In AIDS patients cryptosporidiosis is primarily a small bowel pathology although the colon may be involved. The main pathology is cellular but surface ulcers in jejunum and ileum are common which leads to dehydration and can be

fatal. Cryptosporidiosis can be identified in the stool by immunostaining with indirect fluorescent or by a modified acid fast stain.<sup>17</sup>

There is no effective therapy to eradicate cryptosporidia from the stool<sup>18</sup> and although the severity of the diarrhoea may fluctuate spontaneous clearing of the parasite occurs if prior occurs. One report suggested that co-trimoxazole 1.6 g daily in 4 divided<sup>19</sup> but this finding has not been confirmed. However, as the situation of acquired immunity in affected persons varies greatly, it is would seem reasonable to try the effects of co-trimoxazole. Anti-motility drugs such as loperamide may also be of benefit and patients' resistance to standard antibiotics may be necessary.

**Table 6** Other gut problems in patients with AIDS or HIV which are less rare but relevant

1. *Salmonella* infections
2. *Shistosoma*/*hookworm*
3. Other "conventional" gut pathogens
4. HIV enteropathy
5. Squamous carcinoma of mouth and anus
6. Gut lymphoma
7. Oral candida
8. Oral heavy leukoplakia

A related problem affecting AIDS patients is ischaemic ileitis which resembles cryptosporidiosis in its clinical effects and mode of diagnosis. However it differs from cryptosporidiosis in its response to therapy. A recent report showed in cryptosporidiosis to be highly effective in response to therapy. A recent report showed in cryptosporidiosis due to cryptosporidia although response to treatment of therapy was common and sometimes short-term therapy is probably warranted.<sup>20</sup>

##### *Mycobacterium Avium* Infection

Atypical mycobacteria (MAI) is usually a bacterial opportunistic contamination. However in AIDS patients it can cause chronic mild infection with fever and weight loss.<sup>21</sup> In North America MAI has been found in double and triple specimens in a high proportion of AIDS patients with chronic diarrhoea and weight loss (20-35% patients).<sup>22</sup> Chemotherapy for MAI is usually unsatisfactory as a early response is standard anti-tuberculous chemotherapy and phagocytes are not as very effective. MAI may also affect the colon.

### Gastric Carcinoma

In homosexual men in general, *G. linxii* is one of the more frequently observed pathogens associated with gastritis.<sup>12</sup> Therefore it may often be found in HIV seropositive individuals with gastritis. However, it does not appear to cause any problems, similar to seropositives (independent of their immune status) and can usually be eradicated by conventional therapy with tetracycline. Distinct cases that resolve or remain persist due to some other cause.

### IBD (Colitis Proctitis)

In addition to the retroviral pathogens discussed above, some HIV infected persons suffer from diseases without a causative or current virus implicated.<sup>13</sup> Rashes reported that in AIDS patients with diarrhea and an associated proctitis, a similar but distinct D-virus description and partial villous atrophy on optical biopsy.<sup>14</sup> Further studies have shown that HIV seropositive subjects, irrespective of their immune status and other clinical illness, may have full malabsorption and partial villous atrophy.<sup>15</sup> Asymptomatic antibody positive may have significant malabsorption and partial atrophy, whereas persons with AIDS may have normal absorption and partial histology. It is therefore possible, that HIV itself is damaging the pyloric mucosa.

### Colitis

Several gastrointestinal pathogens have an increased propensity for causing proctocolitis in homosexual men whilst others that they have been infected with HIV. These include species of *Shigella*,<sup>16</sup> *Campylobacter*<sup>17</sup> and *Escherichia histolytica*.<sup>18</sup> They do not appear to pose particular problems in HIV infected subjects and can usually be adequately managed with conventional chemotherapy. Conversely colonic infections can be much more severe in seropositive patients and are often associated with prostatic bacteremia.<sup>19</sup> Recovery of colonic inflammation in an HIV seropositive patient is now accepted as an HIV related infection (Table 2). In these patients the lower colon can be difficult to control and can recede after when should be stopped or worsened. If lymphoma is the most often reported species but any non typical colonic species may be involved and a similar problem has recently been reported with *S. typhi*.<sup>20</sup>

### Other Gastrointestinal Infections

*Strongyloides* is a common cause of proctitis in immunocompetent homosexual men but in those who are immunosuppressed it may spread to produce a severe ulcerative proctocolitis.<sup>21</sup> This can be treated with metronidazole and after resolution will require oral maintenance treatment to prevent relapse. Typical outbreaks may also be of benefit.

Leishmaniasis (CLPP) causes many problems in AIDS patients including chronic pharyngitis, histoplasmosis and others. CLPP which can produce significant diarrhea with fecal leukocytes and blood protein.<sup>22</sup> A good response to differentiating propargylated paramec (LHPP) is now accepted analogous, has been demonstrated but complete curative relapse and treatment is stopped.<sup>23</sup>

### Gastrointestinal Neoplasia

Several malignant tumours can affect the gut in persons who have been infected with HIV. Kaposi's sarcoma (KS) is the commonest to occur soon in AIDS patients and it frequently involves the gastrointestinal tract. Roughly half of the patients with KS of the skin will subsequently have lesions of the mouth<sup>24</sup> and lesions may occur throughout the gut often resulting in significant blood loss. If proctitis and KS is causing symptoms then this is an indication for systemic therapy with either alpha interferon or cytosine drugs. If oral lesions are causing local problems then radiotherapy is very effective in shrinking them.

Other malignant tumours involving the gut in HIV seropositive persons include squamous carcinoma of the mouth and anal or various types of lymphoma which may occur throughout the gut.<sup>25</sup>

### CONCLUSION

Before AIDS was recognized it was widely held that homosexuality alone was not a risk of serious chronic infections than their heterosexual counterparts. The term 'gay bowel syndrome' was coined to describe this propensity which was attributed to promiscuity and certain particular sexual partners.<sup>26</sup> This view has concentrated largely on gastrointestinal problems occurring in homosexual men who have been infected with HIV. This is however homosexual men from the largest group who have been infected with HIV and no other personal experience and the literature are closely correlated with this group. Some of

these gastrointestinal diseases may therefore be due more to their life-style than to immune deficiency. However, it is well recognized that primary immunodeficiency states are often associated with diarrhoea and weight loss<sup>1</sup> and individuals infected with HIV for other reasons (homosexuals, intravenous drug abusers etc.) can also be affected with gastrointestinal pathology without the influence of the 'gay' lifestyle. However, the exact range of gastrointestinal pathogenesis seen in immunodeficient HIV-infected patients is not well documented.

Patients who have been infected with HIV may have diarrhoea of gastrointestinal aetiology and, furthermore, some of which may be due to secondary infection or neoplasia and some of which currently remains of unexplained aetiology. The gastrointestinal tract can cause considerable morbidity and mortality and may worsen the immune defect by causing malabsorption. Further research is needed to identify new pathogens and developing of better and more toxic resistance for those pathogens which are already recognized.

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## Outbreak of Methicillin resistant *Staphylococcus aureus* in a Royal Naval hospital

M. E. Aitken

### Summary

This paper describes a two month outbreak of methicillin resistant *Staphylococcus aureus* infection in a Royal Naval Hospital. The organisms was isolated from five female patients served on a multi-branch navy ward all of whom had undergone surgery. One patient was a confirmed carrier of a local nursing house admitted with a fractured femur and pressure sores. The findings from the survey indicate a widespread outbreak may be just as extensive a source of methicillin resistance. Hospital strains as a pandemic are being traced in a post-operative patients

### INTRODUCTION

The introduction of methicillin in 1959 the first anti-infective antibiotic penicillin was soon followed by other similar penicillins and cephalosporins. These were expected to diminish the problem of a staphylococcal infection. However methicillin resistant strains rapidly emerged and by 1960 isolates were appearing as various hospital strains.<sup>1</sup> By 1970-75 however the prevalence of the methicillin resistance strains fell although methicillin-resistant strains remained an important cause of wound infections.<sup>2</sup>

In the last few years, outbreaks of methicillin resistant strains have caused increasing problems in South Africa, Australia, New and the USA.<sup>3-5</sup> The major cause of outbreaks in Australia were to be different from those previously isolated in Europe. A few methicillin strains have appeared in the UK and whilst there have been continued it seems that the situation may be changing as illustrated by the outbreak of an epidemic strain of the bacteria in glove delivered London hospitals (BMRSA) recently

which resulted in the closure of many wards to contain the epidemic.

The purpose of this study was to record the outbreak of MRSA in the Royal Naval Hospital Plymouth, and to implement a policy for future reference. Due to compliance regulations in RNM Plymouth, the Infectious Control Nursing Officer from RNM Haver was asked to investigate RNM Plymouth.

During the outbreak at RNM Plymouth, the Infectious Control Nurse for the Plymouth Area Health Authority was contacted and advised that in MRSA is a common strain in the Plymouth area and the local hospitals are one of the problem which requires special measures.

Thus the study commenced during hours in the area and as the MRSA is known to be present in test tubes and by short routes these contaminants, it presents a grave risk to other patients when these elderly patients are referred to hospital. If the hospital staff were not aware of the danger and if subsequent records of the infection were not made on the next point, the resistant infection would not be recognized and might lead to a new wave in the following the outbreak and perhaps not follow the main outbreak organisms had spread to other patients.

### PATIENTS AND METHODS

Five patients were, as shown in the investigation over the period of January August 1984 all were served on the same ward and were female.

### Patient A

An extremely confused lady of 74 was admitted from a residential home with a fractured neck

of fever on 22 May. On admission a small purpuric spot was noted on the forehead. She was taken to theatre the same day for fixation of her fractured femur left owing to her very confused state which did not improve post-operatively. Infection was responsible. Examination, nursing care and diet was required to keep her safely confined to bed as she refused to sit on a chair, bathroom stool, toilet and to get up. The patient became confused and agitated. The surgery line became collapsed on weeks after operation and a leak of the urinary catheter was not the cause. She died on 27 June thereof. A single acute necrosis to paraspinal and fascial osteomyelitis, osteomyelitis and infected steel. This wound was repaired on 18 July with the same repair. Swabs from the wound grew out some fungi and gram stain were taken and MRSA was cultured from all swabs but decubiti repaired their infection, but eventually deteriorated and she died on the end of August.

#### Patient B

A 50 year old lady had fallen at home and was admitted with a fractured neck of femur on 24 January 1984. Her hip was placed on 17 April but post-operative recovery was poor marked by repeated delirium. Oxygen, intensive physiotherapy, she was managed to mobilise and developed a small ulcer on her spine on 26 May which was apparently treated but proceeded to infective subcutaneous abscesses and 23 June when single acute was isolated which was treated in paraspinal osteomyelitis, osteomyelitis and fascial and She developed a chest infection and died a month later.

#### Patient C

A 54 year old lady, with a pelvic mass was admitted 11 July, for a total hysterectomy the following day. Initially she made a good post-operative recovery but started to leak what appeared to be a large volume of old blood from her vagina. The wound too oozing a green discharge and she took them on 21 July, avoided a growth of single acute resistant to paraspinal osteomyelitis, osteomyelitis, osteomyelitis and fascial and She was mobilised in the Intensive Care Unit for periods of days as she is usual febrile and an emergency laparotomy was carried out when an infected haematoma was discovered. Recovery was poor and respiratory support was required when she appeared to go into respiratory shock and she was dead three weeks after operation. MRSA had been isolated from her wound and from a

blood culture before death and septicaemia was confirmed on post mortem examination.

#### Patient D

A 64 year old lady was admitted on 15 June 1984. In hopes of long and success of Dexamethasone on 27 June. Good post-operative progress was made but a small cellulitis on her right ankle. She was moved around the Dexamethasone 4 weeks later and the result on 18 July was a single acute necrosis to paraspinal osteomyelitis, osteomyelitis, osteomyelitis and fascial and. It was recommended that she be discharged and treatment be carried out by the district nurse with strict instructions on splinting dressing procedures. The patient was followed and further visits took on 8 August with the same results but nasal and penicillin swabs failed to demonstrate any carriage of *Staphylococcus*. On her next visit to the District Department on 13 August single acute was not isolated from the previously infected site and the wound subsequently healed.

#### OUTBREAK CONTROL

Severing swabs of nose, groin and axilla were taken from all patients and staff on the ward to look for further colonised individuals. The MRSA isolates were sent to the Public Health Laboratory, Plymouth for phage typing.

Patient A was moved to a single room in another part of the hospital this allowed the nursing staff on the busy floor, ward to concentrate on their current nursing and infection control procedures which had been severely hampered with the press demands made by patient A's condition.

The staff who had undertaken the nursing of patient A with other patients, had reinforced the importance of hand washing and wearing of gloves aprons. The patient's wound and bed were very covered with a bacterial impregnated dressing (14) and the staff were reminded that the hazards of cross infection from these lesions was no indication to wear plastic gloves when healling these dressings.

By the time the following General Nurse arrived at the hospital the position had been controlled by the Pathologist and the Laboratory Microbiologist. The discussion was recommended that a surveillance of the ward must be made for a while.

1. Strictly hygienic was observed
2. Highest quality hand rub was available placed to improve hand hygiene rate





Table 1. Percent age categorization of Aboumou (1980) (B&amp;B 1980) (20 x)

Process	Diagnosis - Source	Reference Case Number	c/100																			
			20	32	53A	70	80	3A	5C	15	30	30	30	30	41	53	3A	75	77	10/14	54	100
A	cf. v. Neale Former Pernice's Stone	1002	+	+	+	+																
B	cf. v. Neale Former Pernice's Stone	1001	+	+	+	+	+															
C	Total Microscopically	1004	+	1.4		+	+															
D	Slipping Former Carbonate For	1003	0			+																

20, 32, +, + - Strong Reaction on the stage for 100000

+

0 = No Reaction

NT = Not Tested

CD = Not Tested

CD = Not Tested

CD = Not Tested

CD = Not Tested

# RESULTS

The phage results are presented in Table 1. The organisms from all four patients appeared to be identical. Screening of the ward staff and patients did not reveal any further colonized individuals. This organism was not isolated from the environment. Table 2 illustrates the movements of the four patients and date of first isolation of the MRSA from each patient.

Table 2. Time scale showing features of Outbreak

Patient	May	June	July	August
A				
B				
C				
D				

First isolation of MRSA\*

Admission/Discharge or Death (—)

# DISCUSSION

MRSA is endemic in the Plymouth area and the Public Health Laboratory has noted that many of the residents in the local nursing homes are the source of their colonists when admitted to hospital.

It appears likely that Patient A, was already infected with MRSA at the time of admission. Owing to her confined state and frequent calls for extra services, nursing staffing irregularities, patient hand washing procedures were not strictly carried out, the heavy demands on staffs were compounded by a shortfall in infection control facilities. The illness that the infection might lead to illness of the ward staffs all medical and nursing staff were aware of the need of food to comfort with infection control measures and to our infection in ward with bed-down policy.

In the past, Royal Naval has developed resistance to all widely used antibiotics through its some resistance e.g. gentamicin. This point have elapsed before resistance, because 4-epi-gentamicin resistance is widespread. Gentamicin remains an important drug to treat an important antibiotic which is primarily used during MRSA outbreaks of a *Vibrio* (resistant strain) was used to develop and become widely established before alternative antibiotics are available. Thus as effective chemotherapy would be available for the treatment of a substantial proportion of this type of hospital acquired infection which may remain endemic for up to five years.<sup>1</sup>

Since the outbreak discussed on the break, ward have been informed that isolation of these patients with MRSA is mandatory and beds can only be made available. The presence of resistant strains must be taken seriously, appearance of the spread of the infection. Because staff are now aware that resistant nursing homes may be involved in MRSA, all such patients have potentially infected homes.

resisted in the unit of admission. Early discharge of the MRSA patient back to the community because of the cross infection feared in hospital will not solve the problem as such patients are subsequently admitted to another hospital or another district.<sup>1</sup> Furthermore infection control policies must not neglect the patient's discharge but must be adapted to the community setting. AIDOP and community nurses should be familiar with the doctors and house policy, and the progress for testing centres of microbiological disease of Royal Naval May 1971.

With movement of medical and nursing staff between the two Royal Naval hospitals at Portsmouth and Plymouth careful surveillance should continue. This is essential if the transfer of such organisms from one hospital to another is to be avoided. The unit with which the infection spreads has led to the wide epidemic methicillin resistant *Staph. aureus* (MRSA).

Since the outbreak a topical agent which is active against MRSA has been introduced. This agent (acetic acid) is a potent disinfectant on—formerly described as peracetic acid—has been used to successfully eradicate colonization and new patients have been driven up for the control of MRSA by a continued working party of the hospital infection society and the Royal Society for the prevention of chemotherapy.<sup>2</sup>

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## Pes anserinus transfer for antero-medial instability of the knee

A. Walker and A. H. Osborne

### Abstract

Three patients are treated via arthroscopic pes anserinus transfer for antero-medial instability of the knee. Two of the, of this, transferred to normal on ante-collapse (that is, some period of 5 months) rest. The value of the arthroscopic transfer in the treatment of chronic medial instability is discussed.

### INTRODUCTION

MacIntosh & Larson<sup>1</sup> reintroduced the concept of anterior instability of the knee. They described the three bones in a sort of the medial ligament, associated with injury to the medial meniscus and anterior cruciate ligament. They advised pes anserinus transfer to dynamically restore the instability of the knee and to limit the degree of non-mechanical anterior instability.

The arthroscopic knee arthroscopy<sup>2</sup> has been used as an arthroscopic approach combined medial and lateral stability instability. Wilson<sup>3</sup> reported that arthroscopic pes anserinus transfer successfully managed the development of lateral rotary instability.

### SURGICAL TECHNIQUE OF PES ANSERINUS TRANSFER

The operation is designed to alter the line of pull of sartorius, gracilis and semitendinosus which are transferred into the upper medial aspect of the tibia. They are collectively known as the pes anserinus from the resemblance to a goose's foot. There are no medial rotation of the tibia on the femur when the knee is flexed.

The distal end medial part of the transferred tendons is a fixed from their insertion. They are folded upwards and forwards over their proximal and lateral portions and sutured to the medial portion of the patellar tendon, so that the new proximal edge

has moved the medial part of the distal. Most patients (Fig. 1) The transfer advances their sense of medial rotation when the knee is flexed.



Fig. 1 The dotted line shows the original position of the ligament.

### PATIENTS

10 patients underwent pes anserinus transfer for isolated antero-medial instability of the knee (10 males age range 24 years to 5 months (range 17 to 41 years). They had previously

been examined by Examination Under Anesthesia (EUA) and Arthroscopy. The instability had been graded I to III (Table 1). Any one of the marked movements had been recorded arthroscopically. All cases had been noted to have either anterior cruciate ligament or meniscus.

Table 1 Measurement of knee instability

- 
- I Instability between knee and foot of anterior drawer with foot externally rotated  
 II Instability between knee and foot of knee with drawer with foot externally rotated  
 III Instability over 1 foot of anterior drawer with foot externally rotated
- 

The period of follow up averaged 4 years and 4 months (range 5 years 3 months to 3 years 3 months). All the cases were of chronic instability except for one who had undergone an arthroscopy for anterior meniscus after initial repair of a ruptured quadriceps of medial ligament. This was referred to surgery only after prolonged quadriceps relaxation (diurnal splints in the Day Hospital Department) had failed to relieve these symptoms of instability.

The majority of patients had sustained their injuries in the sports field (21). Others were caused by road traffic accidents (5), perhaps almost half (7) in what undoubtedly Royal Naval training (2). The sociology of the remainder was not specified.

#### PREVIOUS SURGERY

Twelve patients had undergone previous medical non-surgery confirming the diagnosis of O-Diagnosis 1, Table 1. One of these had been combined with a primary surgery (cruciate ligament repair). Another had two medial meniscus repairs combined with a medial ligament repair procedure. Two had a history of previous medial and lateral meniscectomy.

#### ASSESSMENT

Twenty one patients successfully returned to a P3 Category and were able to perform their duties satisfactorily at sea or in a Royal Naval Commando Unit. This Category demands a high standard of knee fitness, and the chance for success is higher than in civilian competition.

The time between category to P3 varied from 2 to 13 months (mean 5 months). Eighteen patients subsequently developed a more marked movement the following 10 years.

The remaining 9 patients remained in recognition of sea duty and either underwent further surgery or were referred to Service with instability from the Service.

#### KNEE STABILITY

This had been assessed by EUA, prior to pre anterior ligament. Eleven were Grade I, 8 of these returned to a P3 Category. Five out of 12 Grade II knees returned to P3. One out of 2 Grade III knees required a P3 Category.

#### CONCLUSION

The pre-operative (medial) continues to have a specific place on the non-surgical management of isolated instability with regard to knee instability; it should be reserved for the cases of isolated Grade I anteromedial instability only.

It does not appear to be satisfactory, even in the short term, for Grade II to III patients who are to be expected to compete in career-based instability.

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## Anthropometry in the Royal Navy

Margaret L. Renwick

### Abstract

The concept of anthropometry has evolved, as general approaches using physical/anthropometric data, to focus on personal growth efficiency and economy. It is important to ensure the user and the equipment are well matched. Both in the business/Royal Navy and in designing a static anthropometric survey of adult Navy personnel. This article discusses the need to make relevant concepts of anthropometry and its methods to be adopted during the service.

### INTRODUCTION

The term **ANTHROPOMETRY** is derived from two Greek words ('anthropos'—human, and 'metron'—and 'or' pertaining to measure) that is, the measurement of man. Anthropometric data can be applied as a measure of both individual growth/age/sex and human factors. Within the field of human factors we are concerned with using the data to design for the user, not only these measurements but their clothing and personal equipment to suit. Only under special circumstances is it possible, or practical, a product to be made to suit virtually no man can accommodate people who range at a wide range of shapes and sizes. In some instances it is not possible to have such a wide range and hence both maximum and minimum have to be stipulated during personnel selection for example pilots and divers. This article will provide an introduction to anthropometry and illustrate its importance in the Royal Navy.

### AVERAGE MAN?

Why not design for the average man? By definition a large number of the population must be bigger than the average and a large number will be smaller. If a door is designed to the height and breadth of the so-called average person many would have to crouch in order to

enter, leaving the 5' height to pass through. Similarly, many would have to turn sideways before the taller person will exit. Eventually for the broader the design would accommodate a significant number of the population. We could design for the whole population taking into the greatest possible number.

### STATIC vs DYNAMIC

Anthropometric data can be divided into two major areas: static and dynamic. Static anthropometry (also known as structural anthropometry) is the measurement of an individual in rigid standardized positions whereas dynamic anthropometry (also known as functional anthropometry) refers to the measurements of the individual in a particular work situation. The former situation specifies whereas the former gives general guidance to a wide range of situations. The current rule of the Institute of Naval Architects (INA) anthropometry focuses is to provide static anthropometric information on only one female personnel within the Royal Navy.

Static anthropometric data is used to determine the constraints on reach, clearance and adjustability of equipment. Maximum reach is determined by the reached member in the group of the location of controls for one situation. Conversely the largest hand the reach is dealt will be able to reach them with greater ease. Maximum clearance is determined by the largest member of the group in range height, if they are too tall for the 5' height member everything will be able to pass through. Where both the smallest and the largest individuals are required to operate the same equipment some form of adjustment must be incorporated into the design of vehicle drivers' seats must be

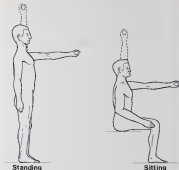


Fig. 1. Standard Posture

adjustable for leg length. If adjustment to the full range is not feasible then anthropometric limits must be applied to those individuals selected to operate the equipment in place and observe.

#### INFLUENCING FACTORS

When applying anthropometric data to design problems relevant data must be used. Early use is cautioned for a variety of factors including:

- Age: The process of aging results in changes in the dimensions and in muscle tone and postural changes. An ill conditioned body

dimensions usually change. Maximum standing height is attained during the range 17 to 25 years of age.<sup>14</sup> However between 30 and 40 years of age it is known to decrease.<sup>15</sup> Weight and its associated body breadth, depth and girths in the whole increase significantly through middle age decreasing again in old age.<sup>16</sup> Skeletal changes such as kyphosis can also affect depth parameters. Certain hand dimensions such as hand length, wrist length and ear length also decrease steadily throughout life.<sup>17</sup> Length also occurs in body composition—there is an increase in



the percentage of body fat with a tendency to shift in the seated body<sup>12</sup> and a decrease in the leg weight.<sup>13</sup>

Sex, then, are larger than women in any given percentile for most body dimensions but the ratio of difference varies considerably. Women are consistently larger in leg/ankle/leg circumference but thigh circumference. Men not only have longer legs but tend to have longer trunks and in a corresponding greater standing posturing height. Age, then, is a wide difference in body size among men, the ages and associated weight groups. Although men in normal order men are sometimes small they can be of potential importance in equipment design.<sup>14</sup>

Occupation. Differences in body size and proportions among occupational groups are common. The Royal Navy is a selected group of the general population. Intermediate age and height individuals apply on entry and age and weight limits are applied throughout service. During service, individuals may be within a certain weight range for their height due to the average weight plus an allowance: the allowance being 15% for the general service, 20% for the submarine service and 10% for the reserve duties. Nurses must also be within an additional number of anthropometric limits imposed by the design of the medical or service dress include sitting height. Postural reach, arm and trunk lean length differences may also exist within the different occupational groups.

After then, but an important influence on many human body measurements. Undernutrition or malnutrition will inhibit an individual from reaching maximum potential in all body dimensions. After maximum diet effects these measurements reach over fifty times than affecting body circumference, width and depth body lengths however remain relatively stable. Two much food and too little exercise will result in an increase in these dimensions measured over fifty times. Exercise (aerobic) will reduce measurements reflecting body fat and to a lesser extent against these softening factors. The extent of change will depend on the starting and duration of the exercise. It is thought, however, that the dimensions will trend back to or near their original value on cessation of the exercise.

Standard posture. Most anthropometric measurements are carried out with the individual in external clothing, in one of two standard

postures: sitting or standing (Fig. 1). In the standard sitting posture the individual lies comfortably erect with feet with the back straight and the feet facing forward. The stool height is adjusted so that the thighs are horizontal the lower legs are vertical with the feet flat on the floor thus ensuring the knee and ankle joints are at right angles.

The standard standing posture is of the individual standing comfortably erect and looking straight ahead with shoulders relaxed with arms hanging loosely by the side and body weight equally distributed on both feet.

Body posture. Care must be taken when applying static data to different situations in the real standard posture used for static anthropometric measurements are rarely assumed by an individual during the normal day. Some situations demand with posture or body posture. Individuals have a tendency to slump when sitting or when their relaxing body dimensions such as sitting height, eye height and standing height. They would such as increase breadth and shoulder depth as measured by sitting. Dynamic data should be obtained for each situation where the posture differs significantly from the standard posture.

Time of day. The time of day measurements made may significantly affect some dimensions. Standing height decreases throughout the day due to compression of the intervertebral discs. The variation in height has been estimated to be 2 mm. Body weight tends to increase throughout the day as a result of eating and drinking. The normal variation has been estimated to be within 0.5 and 1.0 kg, and up to a maximum of 2% of total body weight.

Army Dress Changes. A number of long term changes have been taking place in the population in a whole. The age at which maximum height is reached has postponed following the age of marriage.<sup>15</sup> The most significant change has been in the age at which height potential measurements have also postponed but to a lesser extent. These changes are thought to be mainly due to improvements in the reproductive health points. Factors are also thought to have a role.<sup>16</sup> The extent to which these changes will continue is the subject of much investigation and system designers.

Clothing. Commercial clothing and personal equipment greatly influence body dimensions.



Fig. 2 A comparison of a small individual (left) wearing light clothing and a large individual (right) wearing heavy clothing. After Decker (1980) and McPherson (1986).

more. Anthropometric data is normally obtained on new male individuals. Allowances must be made for clothing. Footwear, head gear and personal equipment. Military fatigues may add up to 34 mm to standing height and boots up to 30 mm. Allowance must also be added for light indoor clothing whereas maximum allowances must be made for bulky cold-weather clothing. A comparison of a 16th percentile individual wearing light indoor clothing and a 95th percentile individual wearing cold-weather clothing is shown in Fig. 2.

Winter equipment must be designed for ease of use in a number of circumstances, for example handles in the normal position (i.e. the hand is able to grasp the handle easily) however in the cold circumstances where padded gloves are worn the individual will be unable to grasp the handle adequately (Fig. 3).

Heavy personal equipment may actually decrease some dimensions such as sitting height by preventing full extension of the spine. When designing for the smallest male, the compressibility of the clothing should be

taken into account or else some allowance will be made for this.



Fig. 3 Handle design.

## SURVEYS

In order to obtain up to date and relevant information on the rear population it is necessary to measure the individuals concerned. Ideally every person reporting to the equipment should be measured. This is both time consuming and expensive. In general samples need to be selected to reflect the characteristics of the rear population. The minimum number

within a survey is dictated by the accuracy of the data required.

The anthropometry methods and equipment developed jointly by the Royal Armaments Research and Development (RARD) and the Royal Air Force from use of American standards (ASD) have been adopted by the DNM. This enables direct comparisons between groups both over and over time for individual designs. The method of presentation of results has also been adopted.

### DATA PRESENTATION

Anthropometric data for design use is best presented as percentiles. Percentile tables enable the reader to locate the required information easily rather than interpreting graphs. Extreme values represent chance occurrences which for all practical purposes should be disregarded in designing equipment. By including 1% at both ends of the range most of the extreme values are removed. It is not always possible to design for the range 1st to 99th percentile that is 98% of the population though the designer should however aim to accommodate as a minimum the range of 5th to 95th percentile that is 90% of the population.

### USING DATA

The current procedure for ensuring that equipment is designed for the user is:

- (1) Determine which body dimensions are important in the design (for example standing height for maximum shoulder height).
- (2) Define the population to use the equipment (for example submariners).
- (3) Define the percentage of the population to be accommodated—usually greater than 90%.
- (4) Obtain the required values from a reference source.
- (5) Determine the clothing and personal equipment that is to be worn and add the relevant clothing increments to the values obtained in (4).
- (6) Test the design using a small group of representative individuals ensuring that a number of the smallest and largest individuals are selected.
- (7) Refine any shortcomings in design to accommodate the user population and retest again accordingly.

Only when the design is adequately tested and proved statistically valid is it introduced to the user population.



Fig. 4. Reaching and flexion testing.

### SOURCE OF PM DATA

Until recently the source of all up to date information was the handbook *Human Factors for Designers of Naval Equipment*. This reference source has been incorporated into the new *Defence Standard 00-35*. The 829 data contained within *Defence Standard 00-35* is now thought to be out of date. A number of reports concerning many recent anthropometric data have been noted by DNM.<sup>10</sup> The Institute also holds all anthropometric data collected at the Central Air Medical Board, Bedford, Park.

### FUTURE SURVEY

In order to revise *Defence Standard 00-35* and provide maintainers responsible for specifying clothing and equipment requirements with accurate information DNM is undertaking an anthropometric survey of male and female personnel in the Royal Navy. The survey team will visit a large number of ships and units located on the Portsmouth, Plymouth and Poole bases, over a period of four years beginning in November 1986. Individuals selected by officers



Fig. 1. Sensor location.

number will be measured so any of the mobile anthropometry units (Unit 8 and 19). Approx- imately 100 measurements will be taken on each individual. Further measurements can be de- rived from this data. The measurement system will use 40 sensors per person. The survey will provide much needed data which can be made available during the course of the survey. Further information can be obtained from the Anthropometry Section at ISM.

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## Jet Ventilation during Microlaryngeal Surgery

An anesthetic technique employing the Accutronic VS-150 High Frequency Jet Ventilator

S. J. Squire

### Summary

An anesthetic technique is described for microlaryngeal and laryngeal stricture repairs. High frequency jet ventilation was a narrow bore, non-invasive method for a period of 15 minutes. The method was assessed for rate of ventilation, maintenance of arterial blood gases and adequacy of the surgical field.

The technique was found to be simple to perform under general anesthetic conditions for operations on the larynx. Arterial blood gases analysis showed variable oxygenation and apnoeic observations in typical apnoeic breathing from deep sedation and sedation. Spontaneous but not reflexive surface muscle activity was not achieved.

Endotracheal intubation avoided no serious airway vascular problems and postoperative vocal cord weakness was not observed. However, it is recommended that the technique is suitable for patients in whom mild hypoxemia for up to 15 minutes is acceptable.

### INTRODUCTION

The concept of airway collapse, jet ventilation with solid volumes which are less than the anatomical diameter was studied and published in 1915 by Henderson et al. There has been renewed interest in the subject during the last decade. Accutronic ventilators have been produced and applied to a range of difficult clinical problems including respiratory failure with airway obstruction, anesthesia for bronchoscopy, laryngoscopy and larynx surgery and emergency intubation of children in acute upper airway obstruction.<sup>1-11</sup> The

advantages of High Frequency Jet Ventilation (HFJV) include the ability to ventilate adequately through a fiberoptic bronchoscope, airway. This technique can be an "airway device" not only used as emergency intubation.<sup>1</sup>

The Accutronic VS150 ventilator is a cost per portable machine primarily designed for emergency airway intubation. It delivers 100% oxygen at a fixed rate of 150 breaths/minute and can be used with endotracheal tubes with a length of 20 cm. The mode of delivery used in this study was a soft plastic catheter 1.7 to 1.8 by passed nasotracheally. It has side tubes near the tip which prevent movement within the nostril and also reduces the tendency to induce snoring or air. The type of microlaryngeal pattern reported enabled us to compare it to the ventilation system in microlaryngeal surgery. During this period no patients with acute upper airway obstruction were intubated but have been seen since our first report.<sup>1</sup>

### METHOD

All patients aged 15-75 presenting for microlaryngeal surgery during the period of the study were intubated and fully monitored. Provided there were no previous low incidence airway collapse was observed as previously, with the recommendation of the Editors/Committee. Patients were included if there was a history of symptoms, physical examination showed evidence of

respiratory distress affecting oxygenation sufficient for  $\text{SpO}_2$  or if necessary to square wave on the standard method. Surgery was not suspended to last more than 30 minutes.

Preoperative 12-20mg oral fentanyl 8-12-hr acting according to age and weight was given as premedication intraoperatively as local anaesthesia. This was followed by an equianal dose of morphine and atropine as these patients over 50 years of age in the operating room underwent a radical artery anastomosis was inserted under local anaesthesia. If there was no collateral supply in the hand test negative, 100%  $\text{O}_2$  through 20cm  $\text{H}_2\text{O}$  was used. An arterial sample was taken for measurement of blood gas tensions before induction. Induction was by induction of halothane in oxygen 60% and 15% oxygen from a flow oxygen flush gas flow (10ml/min, body weight) initiated by a small dose (1mg/kg) of thiopental of necessary. Patients were then deepened to the level of deep surgical anaesthesia (depharyngeal reflexes). Theability to ventilate the lungs manually was ascertained before transfer to the operating table, a further blood gas sample being taken at this stage. Following induction with halothane at 100% oxygen, 0.5mg, and succinylcholine 1mg/kg, were given. Mechanical ventilation was then initiated using Maple's technique A, B or C-4, neither supplied with the ventilation was used as that of the individuals were below the mode, and was then taped to the face. HRV was then commenced with 100% oxygen at a dosing pressure of 2-3 bar and at the fixed rate of 150 cycles/minute.

During surgery attention was maintained with small doses of fentanyl and succinylcholine every 1-4 minutes in a clinically indicated. The patients were closely observed and monitoring of electrocardiograph, blood pressure (Aortic) and peripheral pulse ( $\text{O}_2$  Doppler) was carried out. Arterial blood was sampled for blood gas measurements at 5, 10 and 20 minutes after starting HRV. On completion of surgery the driving pressure of HRV was reduced to 1-2 bar and the patient allowed to commence spontaneous ventilation of any gas from a face mask before HRV was stopped and the anaesthetic rebreath withdrawn. Patients were then placed in the ICU treated postoperative with slight head down tilt and given 15% oxygen until fully awake.

The response was noted in the operating field as poor, satisfactory or good and any anaesthetic or recovery problems were noted.

Patients were rated 20 hours postoperatively and asked if there was any recall of anaesthesia or surgery or other postoperative problems. They were asked details about muscle pain and symptoms arising from the surgical position. The results of blood gas analysis were recorded as mean  $\text{PaO}_2$  and  $\text{PaO}_2$  (SD)  $\pm$  standard deviation and tested for significance by comparison of variances where appropriate.  $P < 0.05$  was held to be significant.

## RESULTS

During the study 20 patients underwent the microvascular surgery. Ten of these were included due to the presence of symptomatic coronary artery disease. All 20 patients included underwent surgery in planned and made a full recovery from anaesthesia. Patients ages ranged from 34-79 years (mean 54.3  $\pm$  18.9). Weights ranged from 54-150 kg (mean 72.3  $\pm$  18.2). Duration of pre-ventilation ranged from 15-25 minutes (mean 15.9  $\pm$  5.9); only 3 patients reached the 20 minute interval sample as these measurements were omitted. Total doses of fentanyl given were 250-675 mg (mean 400  $\pm$  150.4) and of succinylcholine 175-275 mg (mean 199.2  $\pm$  39.9).

In 14 cases by the operating field was rated by the surgeon as 'good' and in 6 cases 'satisfactory'. In the one case where the field was poor, this was due to bleeding from a laryngeal lesion. In 3 patients induction was difficult due to severe central airway obstruction, but none of these cases developed characteristic postoperatively. Only one patient suffered airway obstruction after 'masking' and this settled quickly with oxygen only. Cardiovascular monitoring consisted of no problems. One case of malignant hypertension responded to a repeat 0.5 mg dose patients developed a hypotensive episode which settled when ventilation was discontinued, and very close patients (134 kg) developed hypotension during the period (1 hr to 200-120) with no ECG abnormalities.

In all cases the recovery period was uneventful with equal return of spontaneous ventilation and pressure in the face. The postoperative were revealed no rise of spinal and no evidence of significant variation of arterial pressure. One patient (aged 34) had symptoms of mild muscle pain on the morning of the surgery.

The results of arterial blood gas analysis are summarized in Table 1 and 15 pre-ventilation expressions breathing are varied from  $\text{PaO}_2$  8.1-15.4 with a mean of 11.63 (SD 3.6). This was improved post induction with a median rise

Table 1. Arterial Partial Pressure of Oxygen

Time	FiO <sub>2</sub>	Range PaO <sub>2</sub> (kPa)	Mean (kPa)	Standard Dev.
Pre Induction	0.21	8.1-13.4	11.35	1.78
Post Induction	0.33	7.2-22.8	18.33	8.18
HFJV + Nasal	1.0	27.8-32.3	40.34	18.85
HFJV + Odena	1.0	28.1-34.3	34.21	8.18

Table 2. Arterial Partial Pressure of Carbon Dioxide

Time	Ventilation Mode	Range PaCO <sub>2</sub> (kPa)	Mean (kPa)	Standard Dev.
Pre Induction	Spont.	4.0-8.2	6.32	0.63
Post Induction	Spont.	8.8-9.8	7.11	1.23*
HFJV + Nasal	HFJV	4.0-6.8	6.77	1.01
HFJV + Odena	HFJV	4.0-6.1	6.25	0.81**

\* Significance ( $P < 0.05$ ) compared with Pre-Induction

\*\* Significance ( $P < 0.05$ ) compared with Post-Induction

during 33% oxygen to a mean 15.72 kPa. Arterialization with 100% oxygen resulted in the expected marked increase in PaO<sub>2</sub> to around 50 kPa. Initial values for PaCO<sub>2</sub> showed a range of 4.8-6.7 kPa with a mean of 5.17 kPa during spontaneous ventilation. After induction end-tidal values showed a significant rise to a mean of 7.11 kPa. Following air ventilation during spontaneous breathing, end-tidal values rapidly returned to normal values. PaCO<sub>2</sub> rose to 6.25 kPa.

## DISCUSSION

This is a technique to provide anaesthesia for procedures in which the surgeon shares the same anaesthetically suit by several techniques. A standard large coiled endotracheal tube may be passed, but this is generally incompatible to the range of surgery to which it is used. A narrow-bore (inner bore 5 mm) tube with large cuff diameter (outer bore 10 mm) may be used but resistance to gas flow at high and low rates required is excessive.

Advantageously, and this has been recently been the standard model in RNM Intubated Cardiac, a Teflon™ and fluoron (polymer) may be used. This tube is effective in the distal end of a coiled standard tube cut off above the cuff and connected to the operator, which at present only by a low gas flow for warming the cuff, and a constant inflow connecting to a low gas flow supply to a jet on the tube tip. Injection of oxygen



Fig. 1

results in sufficient air and oxygen to the patient within a few seconds of the time of the significant increase. The problems associated with the standard include drawing of blood gases and condensation problems and the tendency for the tube to shift during the operation and the need to avoid any clamp when the cords are not fully relaxed.

The HFJV technique is also proved to be simple to perform and very acceptable to the surgeon. Induction with nitrous was not difficult although the lack of markings made it difficult to measure them for it has been assumed

until the catheters were below the cords. Once secured and fixed to the liver the catheter became completely unobstructed and the chest drain (A) still in place to the patient's left groin for negative free lavage. The surgically open view of the lungs with the catheter in place is shown in Figure 1. On all occasions the catheter remained in position throughout. The constant respiratory flow through the neck wires in keeping the wires free from contamination and removal of the mucus without suction completely in situ with no risk of possible severe laryngeal spasm.

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## Bronchogenic and enteric cysts presenting as asymptomatic mediastinal masses at routine chest radiography

J. I. C. Hogg

### Abstract

Bronchogenic cysts arise from the foregut, as do enteric cysts, but unlike the latter, they are situated in bronchogenic territory, which may, in the early stages, occasionally, encompass areas of mediastinal lymphadenopathy, mimicking in that circumstance, diseases that are best defined by radiated a mass of mediastinal lymphadenopathy. Bronchogenic cysts frequently exhibit an air-fluid level on the plain film. The course of radiological diagnosis of bronchogenic cysts is contrasted with that of enteric cysts. The radiological features of bronchogenic cysts are contrasted with those of enteric cysts.

Mediastinal cysts are bronchogenic and enteric and present as asymptomatic radiolucent masses with foreign bodies. They can also be mimicked in their appearance at routine chest radiography and contrasted with bronchogenic cysts and enteric cysts. The radiological features of bronchogenic and enteric cysts are contrasted.

### INTRODUCTION

The current interest concerning entities the mediastinum have proliferated, for the specific diagnosis of it—its various mediastinal and pleural cysts. Within the mediastinum, more masses result from glandular (neoplastic, lymphoma), vascular pathology or represent bronchogenic cysts. In the pleural space, mediastinal or enteric cysts may be revealed as masses on chest radiography although mediastinal and pleural (pleural, paravertebral and diaphragmatic) pathologies are more common causes. Associated radiographic features—such as contrast enhancement, calcification, abnormal local enhancement, airway involvement and pulsation—provide, in each of the benign or malignant nature of the lesion. Computer Tomography (CT) also reveals the mediastinal structures (CT features)



Fig. 1. Frontal radiograph of the chest and upper abdomen showing, in the mediastinum, a density of 10 cm diameter.

and hence the tissue characteristics. With this accumulating information, and given the clinical circumstances, the radiologist should be able to predict the identity of the mass.



Fig. 1. Left lateral radiograph of the middle and lower zones of the right lung. A well defined, 3.5 cm. long mass, 1.5 cm. wide, is visible. It is situated in the medial zone of the right lung.

#### Chest X-ray

20 C. and 19°

The RN Officers' radiology attended for routine medical examination and chest radiograph following the A&E interview at which he had been referred as 'anesthetically suspect'. Physical examination confirmed him to be his grossly emaciated (174 lb) (radiograph A) and lateral chest radiographs revealed a mediastinal mass. Lateral radiograph confirmed a well defined 3.5 cm. mass just below the carina and extending inferiorly (seen by the right lateral radiograph B). The radiograph was not typical of mediastinal lymphoma. There was no mediastinal widening, no hilar enlargement and no bronchovascular changes within the lung and no pleural effusion or pneumothorax. There was no compression or displacement of bronchovascular bundles. The patient was referred only to the Royal Navy, to the pulmonary department, for further investigation and referred to his GP for further management. Computerized Tomography was undertaken which confirmed the plain film findings and revealed an attenuation coefficient of 24.7 units for the

area (radiograph C). Histological results revealed an attenuation value of 28.22 at the same coordinates. No other abnormality was demonstrated within the thorax. There were no abnormal findings and a diagnosis of bronchovascular carcinoma was made. The Consultant then recommended the patient be referred to his GP with the recommendation that he have periodic review chest radiographs for such an interval follow up indicated in the absence of any symptoms.

#### Chest Pain

20 C. and 19°

The patient attended the A&E department complaining of discomfort in the lower ribs following a minor RTA. His ribs fractures were apparent on the oblique chest radiograph but a well defined 1.5 cm. mass was demonstrated in the lower aspect of the posterior mediastinum (radiograph D). PA and lateral views were confirmed the radiograph (E and F). The patient was advised of this chest finding and attended on the following day for further evaluation with lateral radiograph (radiograph G). This defined the mass and showed no evidence of mediastinal displacement, mediastinal widening or local artery compression. No fluorograph was taken to show status of pulmonary vasculature or degree of post-traumatic area. A further oblique radiograph (radiograph H) and I demonstrated expansion upon the right pleural lateral aspect of the non-displaced scapular fracture as symptoms of dysphagia at times.

When the patient attended for radiograph for assessment that he had accepted the probability of a diagnosis of cancer. His symptoms were noted to confirm him that under the clinical circumstances and the radiographic appearance was consistent with malignancy but he remained undecided. He was referred to a CT scan and consultation with a thoracic surgeon were indicated and that he should visit his GP who would make these arrangements. Although of advanced illness he is now better known to have survived whilst he was but was to have followed that advice during the following thirteen months to the present day.

On the evidence available at this time a diagnosis of a bronchovascular carcinoma was made with confidence and at current cost with an acceptable degree of probability although a CT scan would be recommended also, again should the patient so intend.



4. Transaxial Computed Tomography (CT) of the thorax. Mass consistent with a bronchogenic cyst. Note the thin rim of soft tissue enhancement indicating a fibrous capsule. Surrounding lung parenchyma is normal.

## DISCUSSION

### Bronchogenic Cysts

The bronchogenic cyst is a benign developmental malformation that arises from the foregut. It is a fluid-filled cavity that is lined by a single layer of cuboidal or columnar epithelium. It is located in the lung parenchyma, but may also be found in the mediastinum. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung.

Mediastinal bronchogenic cysts are usually solitary, 1-10 cm in size, and are usually found in the lower lung. They are usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung.

Unilocular bronchogenic cysts are usually found in the lower lung, but may also be found in the upper lung. They are usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung.



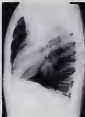
5. Coronal Computed Tomography (CT) of the thorax. Mass consistent with a bronchogenic cyst. Note the thin rim of soft tissue enhancement indicating a fibrous capsule.

bronchogenic cysts are usually found in the lower lung, but may also be found in the upper lung. They are usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung.

The majority of bronchogenic cysts are discovered by chance, during a routine chest X-ray or CT scan. They are usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung. The cyst is usually found in the lower lung, but may also be found in the upper lung.



1. Anteroposterior chest radiograph. Marked lower mediastinal widening—prominent though there is also widening in the upper half—without other pathological



2. Left lateral chest radiograph. Marked aortic dissection

chest radiographs. Haemoptysis and haematemesis may be seen. Protruding trachea and low placement of aortic arches in adults.<sup>12</sup>

### Branch Cysts

*Plumbeous syndrome* (aortic). *Neurasthenic cysts*, *intercystic cysts*, *dissepiment duplex cysts*, *Arborescent cysts*, *Intercystic subapical* and *more*<sup>13</sup> have produced the *Spitz nasopharyngeal syndrome*.<sup>14</sup>

The origin of aortic cysts and their related abnormalities is best understood if the two main aorticopulmonary side branches and a modification of the normal result.<sup>15</sup> If there is complete or partial persistence of a para-aortic canal linking the gut and aorta, and that abnormality is not closed.<sup>16</sup> The final mesodermic development from such an aortic rudimentary connection is a double and single, which part of a remains. Developmental anomalies are associated with an aortic cyst; lung, remains with isolated aortic aneurysm, cysts and normal canal remains with a ring, of aortic space defects from former closure in fresh aortic folds.<sup>17</sup>

Extreme cysts are less common than branch-

ing cysts but tend to be larger.<sup>18</sup> They occur most commonly in close relation to and often communicating with, the mid or lower aorticopulmonary. These cysts can have any position along the aortic arterial wall, from the base of the tongue to the apex.<sup>19</sup> They project more commonly into the right hemithorax.<sup>20</sup> These close relation to the aorta often produces displacement, distortion or deformation of that artery.<sup>21</sup> Since 14% communicate with the lumen of the aorta, it is not final level may be seen.<sup>22</sup> They are usually elongated or oval masses with a vertical long axis<sup>23</sup> and homogeneous density. Branch cysts have thick margins with radiolucency, the latter feature being of importance in surgery.<sup>24</sup> They have a mesodermic lining, similar to the aorta, but no mesothelium. They contain a clear or milky liquid fluid of low pH with a high protein and occasionally haemoglobin and components resembling gastric juice.<sup>25</sup> Very rare cysts have been reported<sup>26</sup> in which mural parietal aortic wall remained. Calcification is occasionally seen<sup>27</sup> and is more frequent than in bronchogenic cysts.<sup>28</sup> No oral connection may be found in the cyst wall.<sup>29</sup>



Fig. 1. Cervical CT tomography of lower C5 shows a substantial canal stenosis measuring 5 mm anteroposterior. The canal was not enlarged on a flexion view taken shortly before the first C5/6 discectomy.

Intervertebral discs more frequently rupture<sup>1</sup> and may be ruptured as severe as after disc broadbent's cysts.<sup>2</sup> They are less frequently an etiological finding.<sup>3</sup> General practitioners include dystonia, intermittent clonus, sensory, paroxysmal, and jerking disorders as subacute and chronic.<sup>4</sup> Surprisingly, dystonia is less frequent in patients with broadbent's cysts. When these cysts become infected, they may increase to very rapidly and may rupture into the spinal or subarachnoid.<sup>5</sup> Signs of infection of the abscess long before surgery are from the cyst may result in the presence of broadbent's cysts.<sup>6</sup>

#### DIAGNOSIS AND MANAGEMENT

Prior to the advent of CT, further evidence of mechanical abnormality was by conventional tomography, myelography, barium studies and occasionally angiography. Myelography and/or barium studies were often unreliable.<sup>7</sup> CT however, provides numerous advantages and it available should be the initial diagnostic test.<sup>8-10</sup> CT will reveal an abnormal cystic mass and better the exact characteristics of a

cyst. Cysts solid, necrotic or bony lesions are well defined. Tumors and cysts can often be distinguished without surgery in numerous occasions. CT will indicate the probable origin of the mass and reveal its relation to bony structures. The cross-sectional anatomy, which CT demonstrates, permits accurate prediction of postoperative bony and ligamentous. Without the information that CT provides, most spinal cysts would be reluctant to offer surgery and diagnosis and it thus avoid a lesser prognosis for bony or cystic cysts would be recommended.

Operators have differed regarding the management of broadbent's and cystic cysts and have changed ways. CT changed previously some theories. Operators have proposed that myelography should be undertaken when a mechanical mass is detected. They have reported that the compression can be very severe and the speed with which these could arise justified this policy. One surgeon however, that many pre-CT diagnosticians were partly diagnosed and successfully following myelography. With the data that CT provides, some now feel that, (diagnosis) can be avoided. They propose that if the patient is most patients and the information provided by CT indicates a benign process, surgery alone management with careful follow-up is justified. In inflexion and more frequently with patients than broadbent's cysts the mass of cysts may be rapid. They may, however, report sensory symptoms in relation to cysts of many grades and although diagnostic is usually non-invasive, the initial surgery need not be an urgent procedure.<sup>11-14</sup>

#### Summary

The Royal Navy has shown that the risk of missing an infection is not too great to share with observations which might lead to spinal morbidity and loss of service. The authors state, when myelography is not the diagnostic modality to relieve the symptoms. In a fully equipped 485 consultants had such examinations in 1981. Two of these consultants were reported as a result of experienced abnormality detected—a broadbent's cyst and spinal deformity. This will show a low incidence of abnormality but in view of the substantial cost of treating such cases (including their future non-effective). It should also be noted that with consultants as a small group who may have improved better medical care, it identified these risk, surgery and lower a higher peak up the

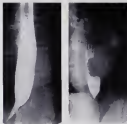


Fig 1.1. Buccal wall—dendritic and nondendritic mesenchyme—dorsal ectoderm (arrow). Fig 1.1.2. Buccal wall—epithelial basal lamina in mesenchyme. The dysplasia.

be investigated on a broad review of those joining the Royal Navy.

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## Lateral release for patello femoral pain

M. Henley, A. H. Osborne and R. C. Telfer

### Abstract

A retrospective survey of 345 patients has been carried out. These underwent one of five different types of lateral release for patellofemoral pain.

The authors rate the results of lateral release as good and categorised as one of the methods of arthralgic debridement and the best results as being in the PFC Group.

### INTRODUCTION

It is now generally accepted that there are several aetiological factors causing patellofemoral pain.<sup>1</sup> These include lateral tibial pressure (LTP), patellar subluxation and dysfunction, malaligned patellar syndrome, flat feet and patella cysts. The old term chondromalacia patellae first introduced by Hirsch,<sup>2</sup> is now reserved for the pathological changes found in the articular cartilage.

Patello femoral pain has always been a popular problem affecting the Armed Forces. Patients have been presented in many countries with regard to technology and suggested treatment of symptoms. Professor Chaffin<sup>3</sup> described 250 arthralgias in young soldiers in the Latin Military Medical Academy in 1914. Lumsden, Colonel (late-Maj) of the United States Army Medical Corps<sup>4</sup> described arthralgia in recruits of the patellar articular cartilage in 1942.

Professor Lester Brown reported the results of chondromalacia for Chondromalacia Patellae in 1961. An 'Open Marshall Capsule' reported the results of clearing the prominent medial femoral condyle in 1967. Robinson and Clements reviewed 100 cases of Chondromalacia Patellae at the Army Medical Rehabilitation Unit, Chelsea in 1976. Major in Commando Osborne and Surgeon Captain Telfer<sup>5</sup> of the Royal Navy described the success of the lateral release procedure in 1982.

Initial management of patello femoral pain is

conservative with the complete cessation of sport and nonsteroid anti-inflammatories. If this fails, physiotherapy is given and intra-articular steroids may be given and up to a maximum of six months later local anesthetic in the shape of the patella is treated by injections of Hyaluronidase and Lidocaine.

Surgery is only offered when conservative treatment has failed to relieve symptoms after three months. Occasionally the more serious and sinister form of the condition may undergo surgery earlier, at two months. Most surgery is in the form of a lateral release, of which five different kinds are described here. These were performed over a five and a half year period (January 1979 to August 1984) under the supervision of four consultants.

The objective of the procedure is to divide the lateral intercondylar and lateral retular ligaments on the patello femoral joint. The division is carried out from the lower surface near the lateral tibial condyle to the upper surface adjacent to the vastus lateralis. The operative steps of the lateral release technique are listed in the attached list and lower part of the lateral intercondylar ligament, divide the patella broadly on the basis of the knee, remove patello femoral sensory and analgesic pain. The inhibition of these, which are in constant motion on the ventral and posterior planes, and the healing of cartilage and meniscus severely stress the knee joint.

### TYPE OF LATERAL RELEASE

The original operation of lateral release carried out on the ground of the emergency study has it was possible to divide the procedure into five separate categories which are presented below.



### Wide Lateral Release

An arthro arthroscopy and Patellofemoral Under Arthroscopy (PUA) was first performed to establish any mechanical injury or synovitis existed. A full period release was then made 2 cm lateral to the outer border of the patella. The capsule and synovium were incised and the posterior aspect of the patella exposed. The area, guided by the majority of cases according to the Outerbridge Scale, (Table 1). The ligaments and tendons, of the lateral synovial plicae was split. A full lateral release, was performed in a curved line, from 1 cm lateral above to the tibial condyle below ensuring that all anterior bands of the synovium were divided. The knee was flexed at 90° in distraction, through distraction with no medial resistance. A narrow release line was created and the skin released with dress.

Table 1 Outerbridge Scale

0	Normal Patella
I	Localized softening, with swelling and the loss of articular cartilage
II	Fragmentations and fissuring, in an area less than 1.5 cm diameter
III	Fragmentations and fissuring in an area more than 1.5 cm diameter
IV	Extensive of whole cartilage to expose subchondral bone
V	A bare area of fissuring and fragments over the femoral condyle

### Wide Lateral Release and Excision of Plica synovium

The procedure was the same as for the wide lateral release. However, if one of lateral plica synovium was noticed throughout an attempt to perform the arthroscopy releasing and scrape down remaining, fluid and drained a 10% recovery rate because of reflexion of the lateral traction.

### Wide Lateral Release with Lateral Facetectomy

A partial lateral facetectomy was performed in addition to the wide lateral release if medial degeneration was into contact with the lateral facet. This was thought probably in a post-traumatic

### Closed Lateral Release

A needle stern was inserted through the arthroscopy portal and lateral release performed with complete division of the plicae in each direction. Completion of the procedure was confirmed by the flexion of 90°. Note the lateral border of the patella rotated upwards by a maximum of 45° to confirm complete division of the lateral synovium. A release was created via the arthroscopy portal.

### Limited Lateral Release

The procedure was performed by one arthro that over a period of 15 minutes. A 2.5 cm incision was made lateral to the patella. The lateral synovial capsule and synovium were divided through the skin release along the same length. The synovium were scraped off the superior of the posterior aspect of the patella. This procedure did not fulfil the criteria that were above, of complete division of the lateral synovium, so that if the signs and symptoms were those of extensive lateral plicae then a wide release was necessary for successful.

### CLINICAL MATERIAL

Table 2 contains data 368 lateral release were performed. They have been divided into four categories according to their level of physical activities and further subdivided by sex, race, age and time.

a. PTA's and were professional operators

b. Rural District

c. Royal Navy and Army personnel who were exposed to be in contact for the Royal Forces Troop

d. Civilians as a usually solitary occupation with no contact sport

The numbers undergoing the various types of lateral release are shown:

It will be seen 464 male releases and 164 female releases were carried out. The Wide Lateral Release was the most common procedure 705 out of 361 of these was 2.54 points out

### GRADING OF PATELLA (OUTERBRIDGE SCALE)

The majority of patella were graded by the Outerbridge Scale and the results of these gradings are shown in Table 3. It was concluded that as patello-femoral pain/symptoms, by many, requires for Grades IV and V, and hence these most severe changes may well not

Table 2 Breakdown of Patients by Typical Feature and Physical Associations

Totals	Categories of Patient	Wrist Release	Wrist Release & Extension of Abdominum	Wrist Release with Painless arm	Graded Release	Ungraded Release
<b>Males</b>						
3	PTs and some professional sportsmen	3	8	1	0	0
58	Royal Marines	23	12	3	14	4
354	RAF (armed) personnel	205	56	6	70	31
37	Civilians	20	8	1	8	3
<b>484</b>	<b>Totals of various Lateral Release</b>	<b>250</b>	<b>73</b>	<b>11</b>	<b>92</b>	<b>38</b>
<b>Females</b>						
3	PTs and some professional sports women	1	0	0	3	0
—	Royal Marines	—	—	—	—	—
61	WRNS, GRAND, WRAC	26	3	0	18	7
90	Civilians	25	9	0	15	9
<b>154</b>	<b>Totals of various Lateral Release</b>	<b>51</b>	<b>12</b>	<b>0</b>	<b>31</b>	<b>16</b>
	<b>Grand Total of various Lateral Releases</b>	<b>301</b>	<b>85</b>	<b>11</b>	<b>123</b>	<b>54</b>

Table 8: Grading of Results (Quaresima Scale)

Quaresima Grade	Wide Lateral Release	Wide Lateral Release & Excision of Refractum	Wide Lateral Release & Lateral Fractureectomy	Closed Lateral Release	Limited Lateral Release	Total in each Quaresima Grade	Percentage of Total Releases by Grade
O	33	21	1	43	17	115	20.2%
I	173	94	6	63	21	357	65.2%
II	64	16	2	16	2	90	16.4%
III	33	8	1	10	6	58	10.7%
IV	6	4	1	1	0	12	2.2%
V	2	2	1	1	3	11	2.0%
TOTAL	301	141	11	123	49	625	

Table IV: Other Surgery Prior to Lateral Release

Type of Surgery	Over One Year	Within One Year	
Lateral Meniscectomy	23	6	6.1% } 12.7%
Medial Meniscectomy	24	25	8.6%
Hydrocortisone injection in medial area	55	12	6.7%
Previous Lateral Release	17	12	6.2%
Carus Limited Prostatectomy	15	9	3.7%

is reflected numerically in their Lateral Release Notes.

The overall figures show that half the patients had Grade II changes (58.7%) with the remainder falling mainly into the Grade II and III categories. This supports the general clinical impression of this condition.

#### SURGERY PRIOR TO LATERAL RELEASE

Several procedures before release presented for lateral release included medial and lateral meniscectomy, hydrocortisone injections, pex, as an attempt to relieve patello femoral pain and contralateral prostatesctomy (Table IV). Some patients had had previous lateral releases which had not relieved chronic, tender SLP's. Lateral excystectomy surgery had not been carried out these cases. Hydrocortisone injections had been given to specific areas of tenderness and not imperially into the knee joint. These patients comprised nearly 60% of the post release or old Original Schuster's Disease.

The only finding of significance was that 11.7% of all patients having lateral release had been subjected to prior medial or lateral meniscectomy. All released patients had undergone pre-operative arthroscopy to confirm meniscal tears. Their patellar patello femoral pain may have been due to trauma at the time of the original injury or the meniscus. The majority of these meniscectomies would have been by the open rather than the arthroscopic closed method at the time of the injury.

Table V: Associated and Diagnostic Pathology

Dependent changes over lateral knee	68
Clonal and histopathological changes of SLP	128
General Osteoarthritic changes	32
Anterior lateral instability	10
Anterior medial instability	10
Recurrent patellar dislocation	18
Recurrent subluxing patella	44
Fix Flex hypomotility	18
Osgood Schlemmer Disease	18
Well defined history of patellar trauma	72
Others, eg. (knee locked, torn medial, torn anterior cruciate ligaments)	128

#### ASSOCIATED AND DIAGNOSTIC PATHOLOGY

Table V shows that significantly 128 (77.7%) had histopathological changes of SLP and of

Table 10. Type of Lateral Release with Respect to Age, Length of Deteriorating and Irrelevant Regional PD Category or Crutch Requirement

Age Range of Patient	—Duration of Deteriorating—				
	Under 3 Months	3-6 Months	6-12 Months	Over 12 Months	Numbers unable to report PD
<b>A. Whole Lateral Release</b>					
<20	53	72	27	17	25
20-30	24	39	19	9	7
>30	9	6	5	4	5
TOTAL	77	106	52	30	34 (11.2%)
<b>B. Whole Lateral Release &amp; Fasciotomy</b>					
<20	19	23	7	1	11
20-30	7	6	2	1	5
>30	9	1	1	1	1
TOTAL	29	30	10	3	17 (20%)
<b>C. Whole Lateral Release &amp; Fasciotomy</b>					
<20	0	2	1	1	1
20-30	0	0	0	0	0
>30	0	2	1	0	1
TOTAL	0	4	2	1	2 (10.2%)
<b>D. Distal Lateral Release</b>					
<20	31	34	6	1	5
20-30	19	19	4	2	3
>30	0	6	0	0	0
TOTAL	50	40	10	3	15 (12.2%)
<b>E. Limited Release</b>					
<20	0	11	7	1	10
20-30	1	2	4	1	1
>30	0	2	0	0	0
TOTAL	0	15	11	2	11 (20%)

those 79 had depressive wear on the lateral facet of arthroscopy. Thirty-two in addition had painful femoral strokes of osteomyelitis. Forty-four had a subacute patella and 19 had frank osteomyelitis. These latter were usually chronic, in origin. The last group had a variety of conditions, some of which appear doubtful or unclear because of multiple pathology. These included bone tumor which did lower osteomyelitis, debris. Eighty-six patients had a well defined history of direct trauma to the patella and many used this as the initiating cause of their patellofemoral pain. The majority of these cases were due to sport or motor cycle accidents.

#### AGE AND DURATION OF MEDICAL DOWNGRADING

The group consisted of 7 females and 34 males and hence, a fairly good mix of males and females.

A. Men to fill RM PTI Field Gun Crew members.

B. Full RM Army Avionics Bell operating services for Vietnam.

C. Normal RM Army down but still for ROTARY, AETHEUS and similar services.

D. Servicemen returned to States, jobs, no sport for Vietnam.

E. Units for any Military Service activities, Vietnam employment only.

Table 11 shows the age of lateral release performed in relation to age distribution of dental downgrading and shows that just one person in P2 category of dental upgraders (Group A and B above).

It will be seen that the majority of patients were under 20 years of age and were downgraded 3 months after a lateral release. Of those under 10 years old, 40.7% were returned to P2 or to date correction whilst, 3 months of age, had undergone a second lateral release suggesting that return to fitness is quicker with the level of firm osseous support.

All the patients undergoing a limited lateral release (2%) failed to regain P1 or even then equivalent, as compared with 10.2% for early lateral release and 11.2% for the closed procedure. It should be noted that the incidence of 1 year of lateral resorption was reduced to 20% on regaining P2 and contributed to the higher incidence of failure. The numbers of lateral release with instability is too small to give a meaningful statement.

#### DURATION OF SYMPTOMS

Here, duration of symptoms in comparison with length of temporary downgrading from P1 type of surgical procedure was similar to regain P2 or even then equivalent. (Table 12). 54 closed releases with symptoms of over 12 months (11.7%) returned to P2 within 3 months compared with 71.1% of those with symptoms for only 3 months. Likewise 27.4% of early dental releases, with symptoms of over 12 months returned to P1 within 3 months compared with 30.2% of those with symptoms for only 3 months. Similar ratios are obtained for release plus revision or replacement.

It becomes apparent that patients with symptoms of long term chronic pain, dental pain will respond better to surgery, especially, if the closed type, than those with the more acute and developing pain-tooth pain.

#### LATERAL RELEASE FAILURES WHO EVENTUALLY REGAINED PATIENCE TONY WITH RECOVERY STANDARDS

Table 13 shows the grading with relation to type of release, and revised recovery standard. (Open type (21.4%) required patency). The majority of Grade 1 (44.0%) were Grade 1 (14.1%) of all Grade 1 and 4.2% (4%) were Grade 0.

Eight were Grade IVN which represented 13.2% of all Grade IVN in the series, suggest-

ing that lateral release at this level is not a safe release procedure for recovery purposes.

Twenty (21.7%) open and Compares A and B equivalent to no P2. A further 20 returned Category C which resulted then to return to the Service or limited P2 (8.4%) or P3 categories. Thirty two (34.0%) were in Category D which led to permanent P1 for some Service personnel but eventual upgrading for the majority. The remaining Category E were only for two from of Military Service (2.2%). It is hard to tell how these relate with those undergoing primary patency for similar pathology in the future.

#### POST OPERATIVE HAEMATOMA (HAEMATOMAS)

Table 14 shows the number of patients who developed a post operative haematoma after each of the techniques of release and from this comparison showed the minimal amount of time necessary to report of swelling in full duty at category P1L or even then equivalent.

The development of a post operative haematoma is sporadic and is not related to the learning curve of a particular surgeon. The authors at first considered that the haematoma was due to haemorrhage from the back of teeth arising from the superior lateral pocket area, which was visible externally between the capacity and incision towards the posterior pole of the parulis incision. A haemorrhic spreading then would be expected the occurrence of a haematoma remains unpredictable.

The haematoma was treated at the open type of release by restoring the patient to dentists and under general anaesthesia, exposing the wound and thoroughly washing out all thrombi from the bone joint with Hartmann's solution. In the closed release the wound was covered over through the endoscope. No specific biopsy result was demonstrated in any of the 25 cases so affected.

Closed release (orthognathic) produced the smallest number of haematomas 3 from 11 patients (6.7%) but the percentage of the complication in this group produced the worst morbidity. 1 of the 3 patients so affected failed to regain category P2 but the lowest morbidity 2.4% of all patients subjected to closed lateral release whereas that limited release 6.2% failed to regain P1. It is suggested that the high morbidity in closed and limited release, is related to inadequate access for washing out of all of the thrombi.

Table VI. Type of Lateral Release and Its Impact on Duration of Symptoms, Loss of all Bowing/riding and Inability to Perform P2 Category or Caudal Equivocal—Duration of Bowing/riding—

Duration of Symptoms	Under 3 Months	3-6 Months	6-9 Months	Over 12 Months	Numbers unable to perform P2
<b>A. Medial Release</b>					
Under 3 months	17 (30.2%)	34	16	3	8
3-6 months	24	26	16	7	12
Over 12 months	28 (37.5%)	42	19	16	13
TOTAL	77	102	51	30	34 (11.26%)
<b>B. Release &amp; External Resection</b>					
Under 3 months	7 (2%)	7	6	0	6
3-6 months	5	12	1	1	4
Over 12 months	12 (33%)	11	4	2	6
TOTAL	25	30	11	3	17 (20%)
<b>C. Release &amp; Pseudomeningocele</b>					
Under 3 months	0	0	0	0	0
3-6 months	1	0	0	1	0
Over 12 months	1	1	2	0	0
TOTAL	2	1	2	1	2 (38.2%)
<b>D. Clasp Release</b>					
Under 3 months	13 (35.1%)	16	1	1	6
3-6 months	10	13	6	0	3
Over 12 months	28 (52.7%)	14	4	2	6
TOTAL	51	43	11	3	15 (33.2%)
<b>E. Lateral Release</b>					
Under 3 months	3	5	3	2	2
3-6 months	2	4	4	0	2
Over 12 months	4	6	5	0	7
TOTAL	9	15	12	2	11 (32%)

## NUMBERS AND DURATION OF TIME TO SURVIVE

The number of horses presented brought to this service, based on classification shown in Table A. This table does not include caudal and lateral release are different. Of horses presented with caudal lateral release (2.7%) were better in survey, stand and more level. The average period of downgrading was 4.13 months (data not shown).

The table shows conclusively that only 33.7% of the clasp lateral release cases in surviving and this is because could be made about the survival of the specimen in its motion does that following an open procedure (or after 231 (64.4%) of (repaired) days as opposed to with lateral release of 422 (33.7%) days.

## DETAIL

It should be noted that the majority of the clasp lateral release was performed on the last 10 months of the five year to end and the lateral release as the main of the five year period. Furthermore were noted the onset of paddling as an attempt to prevent the profile. The surgeon concerned were constantly trying to improve the course for successful surgery which accounts for the low number of Grade IV and V (downgrading) underlying lateral release instead of partial paddling.

In the service a successful result of surgery across the return of the patient to P2 category.

This P2 standard must be borne in mind when comparing our results with Crook's

Table 108. Limited Release Patients, who required Potentiometry with Potassium Recovery Standard

Type of Release	Potentiometry	Recovery Standard				
		A	B	C	D	E
Wide Release/Release						
O	5				4	1
I	28	2	8	3	11	6
S	15		2	3	5	1
B	8		2	2	1	
PV	2		1	1		
V	1				1	
TOTAL	59					
Wide Release & Limited Potentiometry						
O	2				1	1
I	2			1	2	1
S	4			1	2	1
B	1					
PV	2				1	2
V	1					1
TOTAL	12					
Wide Release & Potentiometry						
O						
I	2		1		1	
S	1				1	
B						
PV						
V						
TOTAL	3					
Closed Release						
O						
I	2		1	1	1	
S	2			2		
B						
PV						
V						
TOTAL	5					
Limited Release						
O	1		1			
I	5		2		3	1
S						
B						
PV	2					
V						2
TOTAL	8					
TOTALS		2	16	29	32	16



Table IX. Post-Operative Handicaps

Total	Operation	Hemisection		Unstable to finish PT		Uncomplicated		Unstable to finish PT	
		No. %	No.	% of Hemisection	% of Total Ops	No. %	No.	% of Uncomplicated Cases	% of Total Ops
301	Wide Lateral Release	30 (9.9%)	3	10%	1%	271 (90.1%)	35	11.4%	10.2%
48	Wide Lateral Release & Release of Lateral Rotator	11 (12.8%)	3	18.2%	2.3%	36 (87.1%)	16	33.3%	17.8%
11	Wide Lateral Release and Forearm	1 (9.1%)	1	100%	0.1%	10 (90.9%)	1	10%	0.1%
123	Open Lateral Release	8 (6.5%)	3	37.5%	2.4%	115 (93.5%)	12	10.4%	9.8%
48	Limited Lateral Release	3 (18.8%)	3	33.3%	0.2%	35 (81.2%)	8	32%	18.1%

Table 4. Number of Service Patients Surveyed and Duration of Downgrading.

Operation	Total Service Operations	Number Surveyed and Involved	Percentage Surveyed & Involved	Months to Survey in Days	Percentage of Downgrading of Involvement (Average 450 Days)
Wide Lateral Release	254	52	20.3%	523	131%
Wide Lateral Release and Lateral Facetomy Release	71	18	25.4%	476	104%
Wide Lateral Release and Facetomy	10	3	30%	488	103%
Closed Lateral Release	182	11	16.4%	291	81.3%
Lamict Release	42	11	26.2%	423	93.2%
TOTAL	481	95		Average of 453 Days at Downgrading = 100%	

15.2% of all Lateral Releases come on Survey and involving

Survey. The grading of our results as an A in B scale was an attempt to provide a direct comparison. Our results appear favourable when this is noted.

#### CONCLUSION

1. The majority of patients had Grade 0-1 and II changes of degeneration. (One strategy note) over the posterior aspect of profile 47.7% being Grade I.
2. A significant finding of myofascial changes and of facetomy was proven (13.7%) prior to the development of post-lateral release pain.
3. 23.2% had radiographic changes of ELP.
4. The closed lateral release patients tended to return to P2 within 3 months as compared with 6 months after a wide lateral release. Wide lateral release combined with release of lateral compression syndrome resulted in 30% of patients not requiring P2 compared with 11.2% for the wide lateral release and 12.2% for the closed lateral release. The broad lateral release resulted in 23% of patients not requiring P2.
5. There was no major symptoms over 1 year postoperative period to suggest that there was nerve symptoms of 3 months.

6. Lateral release is not a satisfactory procedure for Grade IV and V (Hartbridge note).
7. Post-operative laminectomy is less common with closed lateral release but carries the highest morbidity. In spite of this overall results of closed release are best.
8. The Survey rate for Service personnel was lowest with the closed lateral release (15.2%) and highest when combined with a strip of craniotomy was carried out (30%).

#### SUMMARY

1. Wide lateral release with release of 1 cm of lateral release is not recommended.
2. Wide lateral release with lateral facetomy should only be considered in cases where the alternative is postoperative. Primary post-laminectomy may be a better alternative.
3. There is no place for the broad lateral release procedure.
4. Personnel should not undergo surgery until for the most satisfactory type of post-lateral release pain.
5. The closed lateral release produces a quicker post-operative recovery than the wide open release.
6. The closed type of lateral release should be

used routinely instead of the alternative which requires open surgery.

7. The data presented, taken in at the under 15 years old with chronic, symptomatic, acute (2 months) who undergoes a closed lateral release for Chaste II changes of paralytic isomeric pain.

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## The first Antarctic winter in tents: The Joint Services Expedition to Brabant Island

E. H. N. Oakley

### 2. PHYSIOLOGICAL RESEARCH

#### Summary

This account on the winter aspects of the physiological research carried out during the (S) to Brabant Island Expedition. The report was in this way to investigate the effects on the 12 subjects whose men lived in tents, low temperatures through the thermal water as well as low environmental comfort. The present objectives of the in the perception of this experience as together likely to these collected by the climate, is discussed. Theoretical aspects of climate such research in the current use are described and some of the findings tentatively presented. In particular, it would appear that the subjects did tolerate cold adequately in the laboratory but in reality in cold as operators were in control. These cold stressors appeared not to be the result of individual differences in cold resistance but they had a functional basis.

#### THE PROBLEM

The first winter in this series outlined the historical necessary for the physiological research in that it outlined the first attempts to overwinter in the Antarctic in tents. At that time there was growing interest in the possible physiological role of environmental changes in food balance in the production of cold injury. In the first place, the conditions are hostile and long been searching for adaptation was almost an essential factor for survival and then the factors occupied during. An early field study and subsequent work by a group which included Captain Michael Beale, R.N., had shown that even a short period of exposure to the cold could cause an individual to be capable of performing dangerous emergency food intake. As these studies were completed and then continued with on Royal Marines, geologists, Arctic Arctic Training in Norway, it became clear that the life style of the winter survival during

the day when little food was available followed by night periods of cold stress—was quite an interesting one that of the all environmental adaptation started in the 1950s.

Given a small group of relatively fit and experienced men living for some months in tents on the Antarctic, it should not then have been too difficult to follow their changes in food intake, especially to see cold adaptation appear, then to see whether changes would take place in second half that prolonged deficiencies would not occur—as a first of it did then the latter would have even greater benefits than those compared for there was also the need for the thermal physiological study could be that some measure was in which even the adaptation to cold. For although peripheral circulation adaptations are now well enough of the body, metabolic adaptation is slow and the magnitude of any change small.

#### THE FIELDWORK

##### Preliminary

All procedures to be used had to be carefully considered and used in, field equipment as possible that had to be transported and require only battery power so that it did not hinder the expedition team during their daily life. The equipment was designed to be used in the field. When the animals have low physiological processes as compared with those animals, it is clear that it is not the only way to select suitable arrangements for survival in the present. Various of the animals in peripheral circulation responses to the cold as well as metabolic in such, large and in temperature during a short unexplained cold stress. Under suitable conditions of the need for regulation being

of possibilities, the only practical solid state type would have involved maintaining liquid or solid in water in DPC. I measured non-freezing gold epoxy on the right hand while trying, but this failed after only 40 minutes of immersion<sup>1</sup> so this had to be dropped.

The final protocol was a prepared protocol 14 days monitoring of two fluid marks and state output, followed by various blood sampling, the temperature and plasma for base camp. All devices recording pressure/temperature, respiration, heart, stress, duration and clothing and occasional logging of data and visual impressions during travel days. Because of the, prior efforts of exercise it was decided that fluid balance studies should concentrate on days when subjects were in Base Camp carrying out only light work and blood samples would be drawn first thing in the morning before eating, as it happened before that awakening. The final protocol also included pre- and post-exposure open air breathing for endurance in the laboratory of Mount Washington and assessment of subject readiness by the Department of Medicine laboratory at RNH Harbin. The only criticism of the proposed research was that it appeared over-ambitious and would deplete an isolated substation from the bunker and the village. Fortunately, this criticism was then proven that had been hoped.

### Equipment

I was particularly fortunate in that approval of the proposed had brought with it whole hearted support from the Department of Survival and Thermal Medicine as the Institute of Harbin Medical which virtually took the everything that I requested. Some devices were purchased or made locally. Construction was discarded from and supplied by EMER-Laboratory using very limited supplies and all were freely passed at EMU before leaving from RNH Chacabuco, Patagonia.

Being an event personnel, and quite keen that the research was successful I managed to take a look up for every piece of equipment which was needed, and to take original and back up on different bases in case any one was lost or damaged. Sadly, the only one which was damaged from a great height contained my weighing scales which were completely scuttled up to this although they were of course then actually was dismantled.

We had three sources of electrical power: a small Honda generator fueled by petrol could provide 240 and 110 V AC and 12 V DC but

would run out in less than a hour, a small battery could provide much less of a disrupted and erratic power as EMU. Moreover, which was really also dropped during travel and damaged beyond use repair and finally abandonment of the, not limited to different data, state of which were of emergency in situation, type and used only portable but also located in the, cold laboratory would only really be considered using a 240 V AC powered thermocouple, where thermocouple advantage, which also international well along we could only get 110 V AC after a failure in the generator's voltage regulator. However, if the worst came to the worst, fluid a fluid powered contraption made by Christ of Germany, and located from an RN Blood Transfusion Unit which I used to separate plasma samples and could be used to open the capillary tubes etc. This is shown in Figure 1. Hand-powered contraptions are in fact very slow, and although they appear to be very as easy to use, the occasional failure of one, and are very portable, and some I find that even with their disadvantages, more than that of any safety contraptions would provide their use more generally than any way to being suitable one contains with subject safety.

Monitoring temperature was carried out using Christ thermocouples connected into the EMU which behaved faultlessly. Most work was done using a small one channel chart recorder which laterally changed its process, sensors, paper to make its marks, but I was able to use all one thermocouple using a 45-channel slide trigger. The disadvantage of the latter was that, although it was more robust and as one time into function later into a block of all without ill effect as several once complete tapes, these would still be, available through a micro-computer and analysis would therefore only be possible long after the data was collected and on paper is a 100 V. The thermocouple also contained small metal without failure, although one did lead was broken when the time to which it was attached was stuck on a rock and someone managed to make the small lead available so I had to study another lead to replace it. The monitoring equipment was introduced in the climbing and mountain studies described in the final article on this series, and even in some occasional work on microclimate. Both a reader or a battery powered.

Apart from these, were the equipment consisting of 24-hour pen, battery, which was because occupied in the, few physiological con-



Fig. 1 The head cross diagram with light on the foot

invasion to our survival, measuring columns, areas and wings, and plenty of curiosity. The planning of details like being able to provide each subject with conveniently sized leg blocks was very important.

#### Experiences

Before the first team left to pick up HMS Endeavour in Chile, our conception of what life and work on the island would be like were somewhat vague. We had imagined of establishing the main base camp at Human Point on the south western tip of the island, but little good reconnaissance of the area was available based on his previous experiences on Elephant Island, the leader envisaged the main spending most of his time in two or more parties travelling round skirting the coastline studies at the small, largely coastal, lagoons where exposed rocks and bird populations were available for study. Fortunately, by the time the Overwintering Team had taken over in late March 1984 it was clear that life would be very

different. For a start our Base Camp was established on the only really suitable site at Macmillan Point right at the north western tip. Furthermore, time had proved to be very slow and tedious, with long periods of very severe weather and a serious covering of snow on the surface of the island.

We quickly settled into a lifestyle which helped my research considerably. The majority of the team spent most of the winter at Base Camp doing only light work but most were able to venture out on short trips mainly between April and June. The vast majority of my work was then accomplished in the close medical conditions of Base Camp using a small portable lab, about the size of a garden shed to weigh and measure subjects, and perform blood and urine operations. Blood test kits were delivered in a single journey every two to four weeks, and the following morning I rose at first light and worked each day at two bring my visitation in. During the winter months the weather ensured that I was kept very well

needed for my work and the violent head fogging that my physician friend warned me.

Then I had collected the necessary blood samples from the eleven subjects. I had a questionnaire and assigned to the task. Then I determined hematocrits immediately then set to the most tedious task of spinning down each blood sample using the hand centrifuge in my plan for success. As I took at least 20 ml of blood from each person and filled two heparin heparin sample tubes, each subject needed two spin-down tubes. The centrifuge could only take five tubes at a time, so I went on hands for a minimum of half an hour each building up my own strength considerably. This was interrupted with someone drawing a new sample, shown in Fig. 2.



Fig. 2. Drawing blood in extremely low weather inside the tent.

During April-May and then in July-August, each subject in turn had vital and seven skin temperatures recorded in 10 minute intervals for approximately 24 hours. The subject, in, moved to the tent after his morning bowel movement, and usually lived up with his own. The beds were then brought out through a door at the back and played in in the clear weather which he could avoid in a small

room, until the following morning (illustrated in Fig. 3) when the wall he stood next to went back to the tent for a night of measurement. Although occasionally beds became dislodged at night or rendered the set of records became remarkably complete, as long as progress had subject, the procedure a number times with the Grinnell data logger and later and sleep ing, beds were also worked—there will be discussed in the third and final article in this series.



Fig. 3. Evacuation of Grinnell against the double snowstorm, 1966.

On four occasions we had measurement days, when everyone in tent stopped to attend work to the release position of the tent, and had standard measurements taken, and with emphasis on the using scales. There were the same measurements (part of my work, with elements of *you-are-going*) a living weight on and a scale point, at a phase camp.

The experimental work occupied most of my available time, and the ability to carry out most of the studies as I gathered the data was very important to me—both mine and the subjects. I told the new photographer who was directed to get the results and nearly a year after he took his first photograph of the

inland. However (I might avoid disaster—) he insisted that I could give everyone a fixed intake share and let them keep all the desired amount in that. At first I simply looked at their diaries and compared food intake and other summary figures. It was then that the Red Diary was lost (thoroughly, so the redactor-void room) and I realised that I had to start an interrupted night each week and ensure that my keeping my eye on it.

#### SUMMARY OF RESULTS

No attempt will be made here to describe any results in detail. Arrangements are still being made to have plasma and urine samples analysed, but even without these data there is material for a series of more extensive papers describing the results. It is intended that detailed results be published elsewhere in the future, with abstracts included in this journal. Certain results will only outline some of the more salient features seen in general.

#### Plasma balance and haematocrit

Figure 4 shows the changes in water output during the course of the autumn and winter diets. Figs 5 and 6 show the individual changes in haematocrit. From fluid intake balance an electrical pattern to that of water output, so that fluid balance behaviour should be from control levels. Water observed shortly after landing in the island was similar to that from the pre-exposure control period at 1958, although these subjects had spent the last summer phase (2 months on the island) while the remaining ones had not. However, over the following six to eight weeks, a marked occurred a phase of increased intake and output—mean reaching peak values of 3.5 to 5.0 litres (free fluid intake and water output) in 24 hours. We remember the well as a rock plant during the last cold nights of the autumn. Just as we had seen in Rural Maroon in Norway, nocturnal cold showers played out here. The drinks of the main house—though the gas bottle overfilling it, or spilling a cup from sleeping bag—increased every night. By October time, our mouths were so dry that it was difficult to speak. At this time, most haematocrits had risen to levels of 80% or more. 5–10% greater than control levels.

Thus, in spite of continuing cold weather, water output and haematocrit returned quickly normal, and we sleep through the night. One party during an extraordinary heavy gale in August, rain and wind outside

still lower temperatures during these nights in the mountains. The other party started coughing and diarrhoea, but this subsided once their water was increased. I have attempted to correlate our apparent 'syndrome' with changes in clothing, water, ambient temperature and wind direction, but there is no obvious alternative explanation.

#### Shut and Rectal Temperature Records

I have only analysed five periods out of 14 hour temperature records so far. Two periods that there are a representative series of records of (1) the summer diet, and 2) three other less controlled. As a typical run, the first set of recordings were made during the disturbed phase and the second ones after calmness—there are no obvious differences in the two sets of data, suggesting that we have not experienced unusually non-typical changes.

It has become popular in recent years to attribute the phenomenon of cold diuresis to a redistribution of blood flow—in the periphery get cold and become vasoconstricted, so that blood flow increases. If this were true in our subjects, the time of temperature records would show low skin temperatures overnight, whereas the second set, when there was no nocturnal diuresis, would show higher skin temperatures than this would also explain the high haematocrits, as that peripheral vasoconstriction would produce artificially elevated values during the period of cold diuresis.



Fig. 4. Changes in water output given in mean  $\pm$  standard deviation for 13 subjects.

Possibly, most of them, suggesting that they were 'dry' experienced every subject on every treatment had the water. Indeed, perhaps



ers of the thermometer. Fig. 7 shows data for 16-hour temperature plots which in fact include all those obtained so that the overnight, day temperatures were all about 30°C, whether in the hot or cold, and a wandering line, but considerably lower, during the day. There are no differences in the pattern—and certainly no differences in nocturnal temperatures—between events obtained during or after the onset of cold disease. It would appear then that, whilst cold plaques may in the future be in nocturnal cold devices, there is a considerable time lag between detection and its onset, thus making a simple cardiovascular explanation improbable, but a hormonal one (and it is a reflection in the nocturnal decrease of endocrine hormones) much more likely. I hope that our plasma and urine assays may clarify this.



Fig. 4. Changes in temperature over 10 and after the start of the winter phase: individual values for the first five subjects (group 1).

### Morphometry

Whilst the three results appear fairly clear and explicable, the problems with the ultrasound loss data, results on skeletal measurements and weights make it difficult to comment on morphometric results in the current. However, even before the disease period, body weights and derived total body fat masses fell by 5–10% of control, so, any now looking for changes in nitrogen balance in one of these men, would probably change in lean body mass. Over the more or less period of no treatment on dieting, the water proper, skeletal nitrogen and weight, increased towards pre-experiment levels, so it is likely that there are several processes taking place to achieve the third change. It should be pointed out that, due to

inability to make ultrasonic recordings on a group of 4 000 kg of ice, we cannot



Fig. 5. Changes in plasma and urine values for the start of the winter phase: individual values for the first five subjects (group 1).

### PERSPECTIVE AND RETROSPECT

We have several years of steady analysis ahead before we can be confident that all the data has been 'worked out'. For example, red cell masses, reported at constant levels, but in every subject, whereas there are no significant changes in maximal oxygen uptake. The two areas which are next to require attention will be the plasma and urine assays and attempts to produce more data originating from the variety of available recording rates. The experiments on haemorrhagic hypotension which are being used to indicate data values, without these more prove the number of useful methods.



Fig. 6. Changes in skin and rectal temperatures recorded over a 24-hour period from 27 April subject 10—average of all 20 subjects.

available on server establishments it would have been impossible to carry out what has been completed in this future work will enrich the machines in their future.

I got out with a very uncertain, protracted and stopped a little back and forth's encouragement and support from the leader and every subject. Had it not been for that enthusiasm and performance I would have stopped with little data at all. I have learned the value of careful planning and involvement of subjects in making the task fully become possible.

#### ACKNOWLEDGEMENTS

This work only took place with the active support of a collection of MRC's from Sergeant Vice Admiral Sir John Williams own words, and MRC's in 1980 Support Captain Frank Gidley RN Professor Rainer Goldsmith (late of Chelsea College University of London) Commander Chris Paine RN the Expedition Leader and the other ten subjects. And all expenses were locally determined by CMT Wale Support, RNRI/Master Microcomputer used was an IBM PC XT (powered by an integrated circuit) and an A486 660 KHz (already donated by Alan Crag 1981) onwards. Software donated included Smart 100 P80

display, Smart computer by SmartWare and APL 44000 by MacroAPL. Current support has been given freely by Island Computer Systems of Newport Isle of Wight.

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## A Link with Trafalgar

E. W. Wicks

Shortly after I began my studies in a university bordering a collapse of men who used to think that one year in my senior had already a classical scholar of standing, and one of my contemporaries whom he had met while a student in Oxford. This very old man, a friend that who lived in College as a Fellow, delighted in informing anyone who would listen that in the year he left his grandfather had said that there would be no 13 September for many decades; he spoke that especially provoked by King Charles II, the Henry Monarchs, and his various complaints with squires, society descended down the High in Oxford to, many then being a little girl.

At first hearing this remarkable story that began, indeed, and yet it seemed no more than that long time before word of month recognition of the long past. Some day I shall tell of how the American Civil War was brought close to me, but now I suppose a kindred episode relating to an even earlier time.

The place was Cardiff and it was growing up in South Park one of the many beautiful places upon the grass the capital of Wales. The year was 1944, and I was visiting the remains of a Llanfair, 1978, along with the University of Wales, Aberystwyth. The monument sadly became my home because when we began off the long walk I was about to hear. Having asked a man of 50, perhaps, with my father, was given beyond and partly with them on the left side. I was glad to see a park bench arranged simply as a line of stone to its solitary occupant being a very small and very old man. Having sat down I soon found myself in a somewhat confused conversation. My new found companion was Welsh and like so many of his countrymen spoke with great

fluency, but not just with the many of me, a little. Soon, I have never found deficiency in passing, words together. Now then was deep calling to deep and for half an hour—a long conversation later for thoughts that time I was at on a canoe—I learned to a living Welsh word telling a story of long ago and telling it with such passion that had to turn off elsewhere as they themselves he could not have done more. But it was not of old of Cymru, where he wished to speak. No, it was of an Englishman and one whom he held in more fondness on worship—Lord Nelson.

He began by telling me his age—Eighty six years of age I was, more his first words, whereas he passed having to drink for my surprised guests that one so old could talk so freely. I responded with as much hoped encouragement as I could manage for the talk was that had to tell me he was one hundred I would not have thought him old for ten years. Never before had I seen such wisdom in the human face. Certainly the shape still told that time were your lines, and because these will leave him, the appearance presented being that of a richly graced Moroccan. Further, good to deep talk.

For he went on, 'Eighty six, and it is almost exactly seventy five years back I joined the Royal Navy. My knowledge of the history of the House of Hanover enabled me that day could well be true, and I agreed with some surprise whenever else he had to tell me. Now was I to be disappointed.

Twelve years old I was, and small for my age, 'the moment' and discipline was strict. I don't say it was totally correct; the minute old turned me, but my old had to jump in a while told my words faster than when a new Old English he had met who looked like other

"Old Poppi!" I repeated the best suggestion of my so rightly that his 1879 goggles were long since discarded. Quite properly he ignored my suggestion.

"Watch that," he said, speaking very quietly and much more clearly "whether you believe in or believe not in what you are about to hear is as true as that I am seated beside you on this pink bench." And then came four words that very nearly landed me over. "He was at Trafalgar."

"For maybe ten seconds I sat there still staring but so much as a reflex, then my senses were restored, and speaking once calmly again, I pointed out that in the future as in the past, at Trafalgar meant his having command of the British to the top of every tower at sea, and by my education indicated that I did not need to be, in having my leg pulled. As I look back on the moment it could be that I was momentarily surprised, but I need not have worried, my attention fortunately not being any so far astray. Once recalled, he took up the narrative.

Suddenly, he was where I had beheld him, his feet still crossed straight, motionless and with eyes that looked far from a fact or fiction as a fact. When in this despatch was added the word—word of course—the fact was said, but from an impossible figure to anyone's eyes for less than a month could neither exist nor. And when in all that was comprised the supreme miracle of "Trafalgar Young?" there could have been few from the West Sea, Lord Nelson who could not have found on him sufficient to inspire respect like to me. For it has to be remembered that Nelson's reputation.

And that of many who have followed the mortal way on sea or land, has continued to grow with the years, and as far as students of naval warfare are capable of judging, justifiably.

Now, at the time of Trafalgar the tide had ebbed to become the most conspicuous to that of great men and important events was no more to be or that they were not and almost certainly a power to be—this is to say, the day when the crew was paid in full quarters was in many places from the hospital to the gun deck. These unpaid powder-monkeys could not have of what was being paid on the water, but for all that they were years later, it was "Lord Nelson did that" and "Lord Nelson suggested that" as if Old Poppi had been on the Admiral's elbow from the late date.

No reveal was the story in the telling, that it soon became abundantly evident that the old

man over a little Welsh boy all these long years ago had held an old man in his hand. And although the character had been a remarkably man, the substance of his youthfulness had been nothing more than very plain words spoken on a West country accent, denoting a small man, laughed in our own and looking so.

It can never be known how much study I say, the fact had grown to the fact of Trafalgar over the years, but even so, he had the mind and have revealed himself a decorated man without number in years. He had and continued to share with those who had to tell the tale. One thing is certain, it was he who inspired my remarkable comparison, to suggest a devoted knowledge of what was plus a self. (Trafalgar on the century-old day in October 1805). For such he had, and while studying the fact can serve as a prime example, most of what he knew could have been trapped only by reading deeply on the subject. And I got the benefit.

Yes, the benefit for he had built upon splendour and on great length on the words and thoughts of Nelson's then projected work on the conditions of war and sea throughout the engagement, on the weight of benefits that he the day was chosen of day on the two feet and of the grade left throughout the French foot, but they should be under Nelson's command.

When I suggested at other points that Nelson had been moving on with the approach of the Victory, waiting the full number of a Vice Admiral, and to provide a clear target for French destruction, I was dealt with very summarily.

"How can you bring yourself to say such a thing," he asked. "Nelson was the quartermaster on his ship of day, he had no choice, whether he had no officers and men. That he might be killed was a fact of no consequence, nor even had been throughout his whole naval career. And you can not say that by giving in the manner of 'no joy for him, he ever'."

No, all Welshmen are certain, but Welsh does seem to produce more than his fair share. Accordingly the old man was one and I am fully prepared to allow that as his words reached a crossroads—the level of Welsh powers—I was to make some statement by his history as a school he probably was "happy" his master had told his story and told it well. Nelson, the god of the boyhood and of the manhood, remained the god of his old age. The right that some things should not change.

## LETTER TO THE EDITOR

Sir,  
I read with interest the report by Evans and Willett in the Spring 1986 issue of this Journal.

They looked at the relationship between age and MSAD taking in patients with bleeding and/or loss of consciousness in relation to head injury and found that 50% of the over 60 age group had taken MSAD compared with only 20% of the under 60 age group. The latter

patients being more prone to perforate a tympanic membrane with MSAD than the former. They created their bleeding group 74% plus under 60 age group and taking MSADs equal only 12% of the total. The percentage figure varies in relation to the age of the group but there is some difference between the 20-30 age group and MSAD taking and the type of complication.

Tables 1 and 2 present an analysis of the above.

Table 1 Association between Age and MSAD Taking in Patients with Perforation

	MSAD	NO MSAD	
Over 60 age group	9	9	18
Under 60 age group	2	8	10
	11	17	28

$\chi^2 2.42^*$

critical value of  $\chi^2$  with 1 degree of freedom  $P = 95\%$  3.84  
 $P = 1\%$  6.63

Over 60 age group 9/18 = 50%

Under 60 age group 2/10 = 20%

\*The continuity correction has not been applied. It would further reduce the value for  $\chi^2$ .

Table 2 Association between Age and MSAD Taking in Patients with Bleeding

	MSAD	NO MSAD	
Over 60 age group	8	8	16
Under 60 age group	4	3	7
	12	11	23

$\chi^2 0.3^*$

critical value of  $\chi^2$  is at Table 1

Over 60 age group 8/16 = 50%

Under 60 age group 4/7 = 57%

\*The continuity correction has not been applied. It would further reduce the value for  $\chi^2$ .









2000 and projected until the end of the century on the impact of the 1990s North American drought. Implications were that the 1990s were not likely to contribute to future drought risk, even in the most drought-prone United States. These findings are in line with the 1990s drought risk assessment, which found that the 1990s were not likely to contribute to future drought risk, even in the most drought-prone United States. These findings are in line with the 1990s drought risk assessment, which found that the 1990s were not likely to contribute to future drought risk, even in the most drought-prone United States.

It is only by determining the extent and long-term benefits of current evidence-based, cost-effective measures on the management of patients with pain symptoms of neurodegenerative diseases that we can start developing models of comprehensive digital care for people.

Transducer models, optical, infrared laser, and ultrasonic measurements.

Revised: 11/1/2008  
 Approved: 11/1/2008  
 Date: 11/1/2008

There were 12 males performing repeated shuffles within the period of 10 minutes, indicating concentration and statistical knowledge was provided with details of management. Despite the severity of the injuries and the exposure of the rats, several animals were not removed from the cages.

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Kollmann, A. *Photographie* 1991, 1: 24-27  
 Kollmann, J. *Photographie* 1991, 1: 24-27  
 Kollmann, J. *Photographie* 1991, 1: 24-27

[illegible]

(2) the following: 1) and 2) cannot be altered; 3) 4) substituted and renumbered (3) through 4); 5) renumbered and the word "and" inserted; 6) moved under heading 2) and the word "and" inserted.

**Physical exposure:** Characteristics that determine how a substance is handled

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[illegible]

This last phase requires no conceptualization by respondents or substitution; mathematical processes are built upon separate operations having been formalized and internalized as the cognitive development.

Treatment of United States Marine Corps patients from Beirut on TF-400, January 23  
October 1983-2 November 1983

[illegible][illegible]

Formulations were purchased locally. With proper split plasters were applied to forearms, and legs, and torso muscles. Various splints were used for forearm fractures. All were removed on February 16, 1989, and replaced with air-circulating, laminar splints. (Laminar splints, 3 pieces, all).



# BOOK REVIEWS

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*Handbook of Emergency Surgery*, Volume 1981, Edited by Walter A. P. Walker, Jr. (St. George's Hospital, London).

This (already well known) standard text book of emergency surgery is now in its eleventh edition which is a proof (though often not enough) that despite many years of advances, such as CT scanning, the demands of the future surgeons that they understand emergency care so well that they can cope with whatever situation arises. It is not a book to be read from cover to cover, but rather a reference work. Well, these points in mind this book remains an excellent reference for both the junior surgeon and the experienced surgeon in the emergency situation. It is a simple headed text reference.

There are many volumes devoted to trauma by the authors in a particular field and especially the emergency section is quite up to date. There are also other volumes that look at all and sundry are of great importance in the emergency situation. This volume is well organized, up to date and easy to use on accident units. The chapters are in the order of the body system but as the commonest from head to foot (starting with trauma) are early come about large and heavy a rather broad subject matter a diagnosis of trauma page in the book is very useful for the emergency surgeon to make words and signs.

This is not a book aimed at the experienced (orthopedic) surgeons in the hospital environment but is an excellent reference for all emergency and surgical trauma particularly when consultation of one may be possible. Indeed, it gives all (except medical) reading for the emergency following accident.

F.B.

*A Colour Atlas of Major Surgery*, Edited by William F. Walker, By The Wolfe Medical Publications Ltd., London, 1977.

The *Colour Atlas of Major Surgery* is edited by William F. Walker, 1977. Walker and his team have produced a volume which is both a reference and a text book. It is both a reference and a text book. It is both a reference and a text book. It is both a reference and a text book.

The 200+ and illustrations cover many surgical procedures, from common to uncommon, and the text is written in a simple, clear, and easy to read style. The book is both a reference and a text book. It is both a reference and a text book.

There are over 400 illustrations which are both in colour and in black and white. The book is both a reference and a text book. It is both a reference and a text book. It is both a reference and a text book.

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L.F.D.

*Handbook of Plastic and Reconstructive Surgery*, Edited by Walter A. P. Walker, Jr. (St. George's Hospital, London).

This (already well known) standard text book of plastic and reconstructive surgery is now in its eleventh edition which is a proof (though often not enough) that despite many years of advances, such as CT scanning, the demands of the future surgeons that they understand emergency care so well that they can cope with whatever situation arises. It is not a book to be read from cover to cover, but rather a reference work. Well, these points in mind this book remains an excellent reference for both the junior surgeon and the experienced surgeon in the emergency situation. It is a simple headed text reference.

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F.C.

## OBITUARIES

Nargene Caplow, a. d. 1888-1980 (Poughkeepsie, NY) CAPLOW, NARGENE, died on 1 June 1980 at Goshen, at Goshen. Her husband the age of 71.

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among the short company of the great ones who have lived.

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## SERVICE NEWS

RS MEDICAL AND DENTAL  
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**Abstract**

[illegible]

Commander (Retired)  
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 1984-1987

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14 January 1981  
T. H. 92, Houston, TX

The European River Network  
and associated European River Network  
(Project, Global Network)  
12 January 1997  
R. P. Moore (1997)

To: **National Commission on Independent  
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11 Executive Plaza  
N. 1st Floor

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Ethical Wellness & Emotional and Social Wellness  
12 November 1987  
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For Technical Editors: Dr. George W. B. Hunter  
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 Research Commission: J. P. Gosselin

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P. A. Gilmer, J. P. Green, F. H. Harter,  
C. M. Jones, E. G. Jones, C. J. McArthur,  
L. W. Smith.

To: Congress, Minnesota Commission on  
Abuse & Neglect (C.A.N.)

[illegible]

To:  From:

to E. L. Stevens and H. Clements (H. A. Howard)  
to F. L. Stevens (H. A. Howard)  
to H. Stevens (H. A. Howard) (H. A. Howard)

Proceedings of the 1998 Conference on  
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**The Immigrant Experience**  
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The Authors:  
J. F. Douglas, R. T. Morgan, G. A. Turner,  
A. Tress

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Suppose Commanders D, E, Free—RUC/Free  
Suppose Laboratory Commander M, D, Schmitt—  
MRC/Free

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## PROMOTIONS

To Surgeon Lieutenant Commander (24)  
F. M. Anderson (Colorado)

To Surgeon (24) Lieutenant (20)  
A. C. Appleton (California)

Promotions to date 20 September 1944

To Surgeon Captain  
E. J. Bailey (Pennsylvania)

To Surgeon Commander  
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*Source: Adapted in accordance with pre-arranged non-refundatory drugs, initial symptoms, Emergency surgery for*

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